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A. C. Gilbert Feted On 40 Years Service

NEENAH, Wis.—Forty years of service with the Gilbert Paper Company, Menasha, were completed June 1 by Albert C. Gilbert of this city, president of the company. He entered the business on June 1, 1907, at the age of 19 to fill the vacancy resulting from the death of his uncle, A. M. Gilbert. The company had been managed up to that time by his father, who was president, and his two uncles.

In 1920 he was made second vice president and in 1923 he became first vice president. He was elected president of the company in 1926, succeeding his father, W. M. Gilbert, who died in January of that year, and he has continued as president and a member of the board of directors since that time.

Production has more than doubled under his direction and the firm is considered one of the most modern writing paper mills in the country.

The board of directors honored him with an informal dinner Sunday, June 1, at North Shore Golf Club, received him into the Forty Year Club and presented him with a gold watch engraved to commemorate his fortieth year with the company.

Appleton District Mills Discuss Smoke Abatement

APPLETON, Wis. — A meeting was held here May 27 to discuss the smoke abatement problem. Industrial representatives agreed that during the next six months they will police their own smoke problems.

Building Inspector Walter Bogan, who earlier this year made a six weeks' survey of the smoke problem, outlined his findings. He pointed out that in many cases smoke density is not great enough to be in violation of the city ordinance covering the subject, but that the smoke does contain soot and fly ash.

Both city and industrial representatives discussed unavailability of customary types of coal and the necessity of using fuel that has much dust and dirt; and the difficulty of securing able firemen.

Among plants represented at the meeting were those of Tuttle Press, Valley Iron Works, the Interlake mill of Consolidated Water Power and Paper Company, and the Wisconsin Michigan Power Company.

A. C. GILBERT
Joins the Forty-Year Club

Inland Press Warns Members Against High Newsprint

CHICAGO—The President of the Inland Daily Press Association has warned newspaper publishers against paying high spot market prices for newsprint. His warning reads as follows: "It has been reported that an increasing number of newspapers have been buying cars of newsprint at fantastic prices—$200 and $250 a ton. The Southern Newspaper Publishers Association sent out a warning to its members and we repeat the warning, that if many more publishers buy paper at those figures an increasing amount of paper will be diverted from what you would call the regular legitimate channels to the companies which are selling paper at such prices. We are also fearful that such purchases at high prices may encourage the large newsprint companies to increase their prices again."

Barrett Mill Installs New Ross Equipment

PEORIA, Ill.—A new heating and ventilating system that will provide a twelve-minute air change in the beater room is being furnished for the Barrett Division mill here by J. O. Ross Engineering Corporation. A Ross hood and exhaust system will also be installed for the No. 1 and No. 2 board machines in this mill.

Buchanan Elected by Lawrence Trustees

APPLETON, Wis.—William E. Buchanan, president and treasurer of the Appleton Wire Works, was elected president of the Lawrence College board of trustees Friday morning, June 6. He succeeds Elmer H. Jennings, vice president and sales manager of Thilmany Pulp and Paper Company, Kaukauna, and secretary of the Fox River Navigation Company. Jennings headed the board for four years.

The election was held at the annual meeting of the board at Riverview Country Club. Lawrence College, of which the Institute of Paper Chemistry is an affiliate, celebrated its centennial this year, with graduation ceremonies taking place during the last weekend.

Buchanan has been a member of the Lawrence board since 1937, and recently has headed the committee on endowment and finance. He also is vice president and director of the Tuttle Press Company and secretary and director of the Northern Paper Mills, Green Bay, Wis. He is a member of the boards of directors of the Chicago and North Western Railway Company, the Charles W. Breneman Company, Cincinnati, Ohio; the Giddings and Lewis Machine Tool Company, Fond du Lac, Wis.; the First National Bank of Appleton, and the Marshall and Illsley Bank of Milwaukee.

Buchanan was educated at Dartmouth College and received the master of business administration degree from Harvard. He is active in the work of the First Congregational church of Appleton and the Y.M.C.A. and is a member of the governing boards of both organizations. His biography is given in "Who's Who in America."

Jennings, the outgoing president, will remain on the board, where he has served since 1938. He will head the committee on endowment and finance, taking the position formerly held by Mr. Buchanan. His four-year term is a year longer than usual, for he continued in office through the centennial year at the request of the board. He is listed in "Who's Who in Business," and is a national officer in Beta Theta Pi fraternity, with which he became affiliated while attending Northwestern University. He also is active in the First Congregational Church.

Chester Burnham Retires From KVP Sales Work

Chester C. Burnham has retired from the sales force of the Kalamazoo Vegetable Parchment Company after almost 22 years of continuous service. He started covering New England for this firm August 1, 1925 and has worked out of the Boston office ever since. He was 68 last Easter Sunday.

There is an interesting story that goes with his K.V.P. connection and here it is. It seems that Chet was in New York visiting some old trade paper friends and was looking up a connection for Boston territory. We arranged for him to represent us there as news correspondent and in that way he got around among the paper trade and made a lot of friends. He decided he might do well in the paper business and from the pages of the Lockwood Paper Trade Directory he made a list of paper manufacturers and wrote 110 personal letters and in this way became connected with the Kalamazoo Vegetable Parchment Co. and later opened up a Boston office for them and managed it.

He had a good sales background before entering the paper field. He had successfully sold advertising space for the Shoe Retailer of Boston and Hide & Leather of Chicago and in 1910 he edited and published a shoe publication in Cincinnati known as the Shoe & Leather World. Later he was a sales promotion manager for the sole and heel department of the Goodyear Tire & Rubber Co., Akron, Ohio and still later was advertising manager for the General Phonograph Corporation of New York makers of Okeh Phonograph Records.

Chester thinks he has had a fairly active life and plans to spend the summer at his cottage on Buzzards Bay, Mass., but says he will return to business duties this Fall.

Fibreboard Names Gardner Head of Research Program

ROCHESTER, N. Y. — Dr. Howard S. Gardner, associate professor and chairman of the Chemical Engineering Department, University of Rochester, will resign July 1 to become director of research and development of Fibreboard Products, Inc. Dr. Gardner will head the firm's new Research and Development Division to be established in Antioch, Cal. He has been a member of the University of Rochester faculty since 1938, when he was appointed director of the chemical engineering laboratory. Early this year he was promoted to the chairmanship of the Chemical Engineering Department, Division of Engineering.

Van Alystne Made Director Small Business Council

COHOES, N. Y.—William N. Van Alystyne, vice president of the Hudson Falls Paper Co., was elected to the board of directors of the New York State Council of Small Business Associations at the annual meeting held recently in Albany. He is president of the Empire State Paper Association, which organization he represents on the state council.

Ashby Heads Pacific Technical Section

VANCOUVER, B. C. — John Ashby, New Westminster Paper Company, New Westminster, B. C., was named chairman of the Pacific Coast branch, Technical Section, Canadian Pulp and Paper Association, at its annual meeting recently in Vancouver. Over 70 members of the branch were in attendance.

Other officers are: H. Ostrowski, Pacific Mills Ltd., vice-chairman; Miss M. E. Logan, secretary-treasurer. Executive committee is H MacBean, Woodfibre, and J. Fraser, Port Alice, both with British Columbia Pulp and Paper Company, Ltd.; M. Rhodes, Sorg Pulp Company, Ltd.; C. E. Craig, Sidney Roofing and Paper Company, Ltd.; W. MacGillivray, Powell River Company, Ltd., and R. Stringer, Bloedel, Stewart & Welch Ltd.

Cody Joins Staff of Container Laboratories

CHICAGO—Richard J. Cody, formerly sales manager of the Container Corporation of America carton plant at Boston, joined the staff of Container Laboratories, Inc.

A graduate chemical engineer from the University of Wisconsin, Mr. Cody entered the industry in 1928. After several years in carton laboratories, production and sales departments, first with the Sefton Manufacturing Company and later with the Container Corporation of America, Mr. Cody was transferred to the Manayunk plant of the Container Corporation of America in 1941. There he served as a sales executive for both the folding carton and container divisions, and later as executive assistant to the vice-president in charge of eastern operations.

Stakel Joins Brown as Advertising Manager

NEW YORK—Frederick C. Stakel, former lieutenant commander, U.S.-N.R. has jointed the Brown Company, producers of wood cellulose and allied products, as manager of advertising and sales promotion. Having recently completed an intensive tour of the company's plants at Berlin, N. H., Brown Corporation's mill in La Tuque, Quebec and the various sales offices, Mr. Stakel is now situated at the Brown Company's New York Office, 500 Fifth Avenue.

A native of Batavia, N. Y., and a resident of Upper Montclair, N. J., he has been associated with Scott Paper company and E. I. duPont de Nemours Co., Inc.

Pulpwood Group Names Esgate To Mechanization Program

NEW YORK — The American Pulpwood Association has appointed Ernest E. Esgate, ex-Corps of Engineers major, as its logging engineer to head up the Pulpwood Production Mechanization Program. Mr. Esgate was born and raised in the vicinity of Coeur d'Alene, Idaho, and grew up in the logging and sawmill industry. Prior to joining the Association, Mr. Esgate was Chief of the Construction Equipment Section of the Engineer Board at Fort Belvoir, Virginia, where he handled development, design, and fabrication of equipment for the Corps of Engineers.

His woods experience, in addition to fifteen years spent in logging and sawmilling in the West, includes over two years with the New England Timber Salvage Administration, where he was responsible for production, preparation of specifications, and establishing of cutting practices. Prior to that, Mr. Esgate was with the U. S. Forest Service, and the Soil Conservation Service, where his work included organization and installation of logging equipment shops, road construction, and timber sales.

Loftus Returns to Port Angeles For Crown-Zellerbach

CARTHAGE, N. Y.—Glendon F. Loftus, for twelve years office manager of the National Paper Products Company of the Crown Zellerbach Corporation, will leave here soon for Port Angeles, Wash., where he will serve in a similar capacity the corporation's Washington Pulp and Paper Company division.

A native of Minnesota, Mr. Loftus became associated with Crown Zellerbach 21 years ago, and is returning to the Port Angeles company plant with which he was first affiliated after his return from service with the army of the United States in World War I.

Walters and McGurn Reelected To Forestry College Board

WARRENSBURG, N. Y. — J. Henry Walters and James D. McGurn were re-elected president and vice president, respectively, of the State Forestry College Board at a recent meeting of dirctors connected with the Pack Forest Preserve. Lt. Gov. Joe R. Hanley placed a wreath on the grave of Charles Lathrop Pack, who founded the preserve of 22,000 acres for experimental purposes.

Byers Retires from B. C. Post

VANCOUVER, B. C. — William Byers has retired from the Vancouver office of the Forestry Department of the British Columbia government. He has a record of 42 years' service with the department and is now retiring to enter private business. Mr. Byers was born in Scotland in 1882 and came to Canada in 1903.

This BIRD DIRTEC DOES A GREAT JOB

Of Separating **DIRT...**

From **PAPER STOCK** ***both ahead of your Bird Screens and on Screen Tailings***

The Dirtec is proving by all odds the most effective means of employing pressure-drop to pull dirt away from fibre and detour it out of the system. Simple, compact, inexpensive, easy to install and maintain it provides the finishing touch for your dirt removal job.

As a screen tailings unit it does a better job of separating dirt from fibres with insignificant fibre loss and it handles a greater volume of tailings so that screening efficiency is kept at maximum. It takes up only a fraction of the space required by auxiliary screens.

Ask us to show you how neatly, effectively and economically it fits your present dirt removal requirements.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Hoosier Trade Finds Little Improvement

INDIANAPOLIS — Little change was discovered last week in the paper situation here. In some instances supplies were reported a trifle more abundant than during the first quarter and even yet more than at the same time last year. This situation was brought about by increased production at the mills. Prices all along the line were inclined to be strong and manufacturers say their costs are slowly rising. One of the chief items in the increasing cost of production is the increase in taxes, both state, county and municipal. The labor situation is easing off somewhat, with more available. Strikes in mills this year in Indiana have been very few and lost hours from this cause are less than is the general rule.

The newsprint situation continued much involved the last week with no improvement in sight. Papers continue to be plagued by high prices on newsprint and by scarcities which are holding down the lineage they are able to take. This is particularly applicable to the larger daily papers. The smaller weeklies seem to be more fortunately situated since they mostly deal with jobbers and are not bound generally with contracts. Local papers are investigating the system of the Chicago Tribune for saving newsprint by salvaging the final lengths of paper remaining on the cores.

A sharp increase is expected in demand for building paper and roofing this week. The carpenters' union voted last week to return to work and about $30,000,000 worth of construction, which had been tied up for nearly two months, is expected to be under way at the first of this week. Warehousemen in these products say they have sufficient stocks to take care of the situation.

For perhaps the first time this year there has been an easing off in demand for rags and most grades of waste paper. Supplies of both are building up in local warehouses. Insofar as paper is concerned, collections during the spring have been very heavy. Prices, however, are holding relatively firm.

Seasons First Shipment Goes Through Barge Canal

BUFFALO, N. Y. — The season's first shipments of pulpwood helped swell state barge canal cargoes last week to 101,660 tons, a 66 percent jump over the same week in 1946. The State Public Works department said that all 10,097 tons of pulpwood moved through the Champlain division.

Blakeslee Describes Wallpaper's History To Lions Club

GLENS FALLS, N. Y.—Robert B. Blakeslee, research chemist of the Imperial Paper and Color Corp., described the history of the manufacture of wallpaper to the present day and predicted future trends in an address before the Lions Club at a recent meeting. He explained the use of wallpaper by the Chinese and through the Middle Ages and pointed out the part it has played in home decoration. Discussing the present, he described how the artists' designs are transferred to the printing rolls and spoke of the raw materials, including the dyes, necessary in manufacture.

Waste Market Dull In Midwest Center

CHICAGO—Declines in the prices of waste rags and of at least one grade of waste paper were reported in the waste paper market this week. Mill price of No. 1 mixed paper was quoted at $16 a ton, a figure $2 less than the price which prevailed last month. Dealer quotations on miscellaneous mixed paper were cut to 30 to 35 cents a hundredweight, representing a 5-cent reduction according to reports. Other grades were said to be steady with $30 the mill price for No. 1 old corrugated and $20 a ton for No. 1 news.

It was said that the demand for mixed paper was not quite as firm as for news but that corrugated was in exceptionally strong demand. A moderate demand is expected throughout the month.

Waste rag quotations were $5 a ton below last month. Dealers buying prices on waste rags were said to be virtually unchanged. Slower over-all demand was reported for waste paper as most mills prepared for their annual shutdowns which customarily are made in June or July. Demand for waste paper is reportedly expected to be dull until the middle of July when most mills will have resumed operations.

Bulkley Dunton Names Wottrich As Display Papers Specialist

CHICAGO—William H. Wottrich, has been appointed as Chicago manager of Bulkley, Dunton Company's Display Papers Division. Mr. Wottrich, who took up his new duties on June 1st, will make his headquarters at 2635 South Wabash, Chicago, where Bulkley, Dunton's branch office and warehouse are located. Mr. Wottrich who spent many years in the Garrison-Wagner Company, Chicago, is well known in display circles, particularly in Chicago and the Central West. In his new capacity with Bulkley, Dunton he will contact accounts in that territory.

Mr. Wottrich's appointment follows the withdrawal of Harve Ferrill & Company as Chicago representatives of Bulkley, Dunton. Due to expanded activity in their display unit manufacturing business, Mr. Ferrill and his associate, Stan Holtz, found it necessary to move their plant to Rockford, and to discontinue their sales representation of Bulkley, Dunton's display paper line.

Sees Supply Catch Up On Container Demand

CHICAGO—J. H. MacLeod, vice-president of the Hinde and Dauch Paper Company, last week told the National Association of Purchasing Agents that demand for paperboard shipping containers is easing and that several lines were fairly well filled up, including cereals, canned goods, small radios, wines and liquors. Supplies of box making materials, such as liners and corrugating mediums, will remain tight in the third quarter with some slight easing expected during the fall.

A somewhat better supply early in 1948 is expected if new machines now being installed can get into production by January. Mr. MacLoed said that new productive capacity should amount to 850,000 tons annually, or about 10 per cent of 1947's expected record output of 8,449800 tons. The Hinde & Dauch executive added that so far there had been no marked decline in the backlog of domestic orders. He looks for an orderly adjustment in 1948, believes that the upward spiral of prices is over, but feels that no general softening of box prices will occur until there are further and more general price cuts in materials and supplies.

Nekoosa-Edwards Supports Plan For Airport Site

WISCONSIN RAPIDS, Wis.—A steering committee was named at a meeting June 2 to select a permanent chairman and to help arrange for a public presentation of facts concerning the question of obtaining a municipal airport. Among the speakers at the meeting, which was held at the Elks club, was S. A. Casey of the Nekoosa-Edwards Paper Company, who said that his people would support any site selected for the airport, and urged that all the information available should be compiled and set down for public examination.

Imperial Paper Operations Hampered By Labor Dispute

COHOES, N. Y.—A labor controversy is interfering with operations at the Hudson Falls plant of the Imperial Paper and Color Co. where the employes are seeking a wage increase. The American Arbitrator's Association is attempting to settle the dispute and during the past week appointed a representative to confer with labor leaders and company officials. The firm employs several hundred workers.

Box Men Meet in Asheville

ASHEVILLE, N. C. — Forty members of the Paper Box Manufacturers' Association met for one-day business sessions at Grove Park Inn here June 2. Officials from member companies of the association attended from the Southern states.

The New VALLEY VORTEX Pulper

A prominent paper mill, considering the purchase of four Valley Vortex Pulpers, wrote the following after witnessing a demonstration and getting first-hand knowledge of the machine's high production capacity:

"We were very favorably impressed with operation of your machine; so much so that we believe three units will handle the production which we had contemplated for four . . . and we are accordingly placing our order for three machines."

We cite this case to emphasize the extraordinary cost-cutting ability of this powerful pulper. Let us show you how the Valley Vortex Pulper can save money for you, too. We'll be glad to have you write us.

VALLEY IRON WORKS Company

FINANCE

Marathon Net Profits Show $ Million Increase

WAUSAU, Wis.—Net profits for Marathon Corporation were more than one million dollars higher for the six-month period which ended April 30, than in the same period last year, according to D. C. Everest, president and general manager.

Net profits for this period in 1947 were $2,484,961 as compared with $1,400,919 for the same six months last year. This represents an increase of 77%, Everest reported.

Net earnings were equivalent to $1.81 a share on 1,300,000 shares of $6.25 par value common stock outstanding, after provision of $125,000 for preferred stock requirements, compared with 98 cents a share on the same number of shares and after preferred dividend requirements the previous year.

The company, which makes protective food packaging, showed consolidated net sales of $20,979,273 for the six months ended April 30, which is up 32% or $5,119,687 over the sales total of $15,859,586 for the same period in the preceding fiscal year.

Celanese Declares Dividends

NEW YORK—Directors of Celanese Corporation of America have declared a dividend of 25 cents per share on the common stock of the corporation, payable June 30, 1947 to stockholders of record at the close of business June 14, 1947.

Directors also declared the regular quarterly dividend of $1.18¾ per share on the first preferred stock, $4.75 series and the regular quarterly dividend of $1.75 per share on the 7 percent second preferred stock, both payable July 1, 1947 to stockholders of record at the close of business June 14, 1947.

Canadian Celanese Votes Dividends

MONTREAL—Directors of Canadian Celanese Ltd., have declared a dividend of 50 cents per share on the common stock, in respect of the second quarter of 1947, payable June 30, 1947 to stockholders of record June 14, 1947. Directors also declared dividends on the preferred shares; $1.75 series, of 43¾ cents per share; $1.00 series, of 25 cents per share, both of which shall be deemed to be for the three months period from April 1, 1947 to June 30, 1947. Both preferred dividends are payable June 30, 1947 to stockholders of record June 14, 1947.

Puget Sound Dividends Are Declared

BELLINGHAM, Wash.—Directors of Puget Sound Pulp & Timber Company have declared the regular quarterly dividend of 30 cents a share on the preferred stock, payable July 1st, and a dividend of 50 cents a share on the common stock, payable June 30th, both dividends payable to stockholders of record June 14, 1947. In 1946, dividends on the common stock totaling $1 a share were paid in quarterly instalments of 25 cents each.

Donnacona Bond Issue Surprises Canadians

TORONTO—Some Canadian investment interests were surprised last week to learn that Donnacona Paper Co. had sold a $5.5 million refunding bond issue privately in the United States. It had been felt that the company would take advantage of dollar parity to retire its U. S. pay bonds and place the refunding issue on a Canadian-pay basis. It is understood that the bonds are 15-year and carry 3½% interest coupons, and were sold for practically par.

As of Feb. 1, this year, there were outstanding $4,987,500 of the originally issued $7 millions of 4½% three-way pay bonds. It is believed proceeds of the new issue will be used to retire the 4½'s and to acquire timber limits.

One explanation for the sale of the new bonds in the United States has been that the Canadian market could not offer high price for short-term low-interest rate bonds, which the company apparently got. In any case, it is pointed out, that to sell bonds in the United States is the reverse of what has become a trend to repatriate debt at a time of parity. Should the Canadian dollar again go at a discount, interest charges on a U. S. pay bond will take a larger part of earnings than if the debt were held in Canada.

Donnacona Paper Co. is considering purchasing timber limits from Brown Corp., Canadian subsidiary of Brown Co., it is reported here. It is understood funds will be provided from proceeds of the recent sale in the United States of an issue of $5.5 millions in bonds, after the major portion of such sale has been used for redemption of the 4½ percent first mortgage sinking fund bonds.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending June 7, 1947

STOCKS

	High	Low	Last
A. P. W.	4¼	4	4
Armstrong Cork Co.	40¼	39	39¼
Armstrong Cork Co., pf.	103	102½	102½
Celotex Corp.	23¼	21½	22⅜
Celotex Corp., pf.	20½	20¼	20½
Certain-Teed Products Corp.	14	13½	13⅝
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	20¾	20⅜	20⅝
Champion Paper & Fibre Co., pf.	106½	103⅜	104
Congoleum Nairn Co.	26	25	26
Container Corp. of America	35¾	34½	35¼
Crown Zellerbach Co.	27½	25¾	27½
Crown Zellerbach Co., pf. 4.20	102¾	102¼	102½
Crown Zellerbach Co., 4 pf. 4	111½	108⅜	111
Dixie Cup Co.	26	26	26
Dixie Cup Co., A	52½	51	51
Flintkote Co.	28⅛	26½	27⅜
Flintkote Co. pf.	105½	105	105
Robert Gair	6½	6⅛	6⅛
Robert Gair, pf.	19½	19	19
International Paper Co.	43	41¾	42⅞
International Paper Co., pf.	103	100	103
Johns Manville Corp.	38⅞	37	37⅛
Johns Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	23	22⅝	23
Kimberly-Clark Corp., pf.	106½	104¾	106½
Mac Andrews & Forbes	35½	34⅞	35
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	22¾	20½	22⅝
Mead Corp.	18¾	18	18
Mead Corp., pf. 4¼	92	92	92
Mead Corp., pf. 2	44½	44	44
National Container Corp.	37⅛	35⅝	36½
Paraffine Companies, Inc.	60	60	60
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	20⅛	19⅝	20
Rayonier, Inc., pf.	36½	36	36
Ruberoid Co.	47	45½	45½
Scott Paper Co.	44	43	43
Scott Paper Co., pf.	98½	98½	98½
Sutherland Paper Co.	39	39	39
Union Bag & Paper Corp.	29½	28¼	28⅜
United Paperboard Co.	15	15	15
U. S. Gypsum Co.	95	93½	95
U. S. Gypsum Co., pf.	190	190	190
West Virginia Pulp & Paper Co.	38	36¾	38
West Virginia Pulp & Paper Co., pf.	111⅛	111½	111⅛

BONDS

Abitibi Pulp & Paper Co., 5s '53	....	....	....
Celotex Corp., 3¼s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	103⅜	103⅛	103¼
Mead Corp., 3s '66	....	....	....

New York Curb Exchange

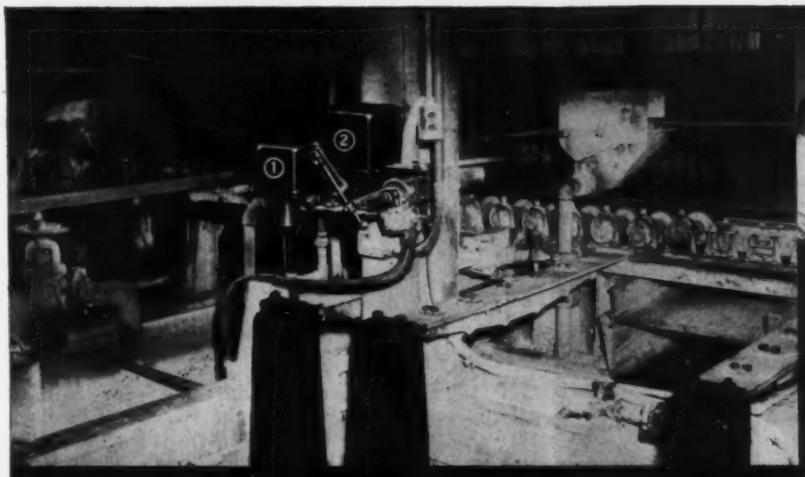
High, Low and Last for Week Ending June 7, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	41½	41½	41½
Hummel Ross Fibre Corp.	....	....	....
St. Regis Paper Co.	9⅜	8¾	9⅛
Taggart Corp.	9¼	8¾	9

BONDS

American Writing Paper Co., 6s '61	100¼	100¼	100¼



PART OF MICROMAX PH CONTROL INSTALLATION AT KALAMAZOO VEGETABLE PARCHMENT CO. (1) IS ELECTRODE ASSEMBLY, (2) IS ALUM VALVE DRIVE UNIT.

MICROMAX PH CONTROLLERS FOR 3 MACHINES, MOSINEE PAPER MILLS

FROM PAPER OR BOARD MACHINE TO LAB— THERE'S AN L&N INSTRUMENT FOR pH

Whatever the pH problem may be—automatic control of stock fed to the Fourdrinier or cylinder, spot checks in the mill, control lab tests—there's an L&N instrument for practically any measuring need.

For Automatic Control

Automatic Micromax pH Control is now spreading rapidly. In some cases it helps to improve the uniformity, texture or color of finished sheet: in others it increases wire life and often saves alum.

Engineering-wise, Micromax pH Control offers the great advantage of being designed as a complete system, with components specifically intended for each other and for the responsive, dependable Micromax Controller. This instrument can be either a strip-chart model, with a long, detailed record and the feature of automatically standardizing its measuring circuit; or a round-chart model, with an unusually readable scale and a 24-hour circular chart.

For Manual Checks

The man who is not a pH expert finds the Glass Electrode pH Indicator easy to use and thoroughly dependable. The operator simply pours pulp, bleach, white water or other sample into a beaker, then reads pH on the Indicator's scale. Hot, damp atmosphere, up to 95% humidity at 85 F doesn't affect accuracy.

For high-precision testing by trained technicians, the Universal pH Indicator reads pH directly with its own glass electrode or any other electrode —has an accuracy of ±0.05 pH.

If you have a pH measuring, recording or controlling problem, we suggest you call in an L&N engineer. Or, if you prefer, we'll send any of the following publications:

Portable Glass Electrode pH Indicator	Cat. E-96(2)
Micromax pH Recorders	Cat. N-96(1)
Paper Stock at Specified pH	Bul. N-96-709D

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USING PORTABLE INDICATOR FOR LAB TESTS AT W. C. HAMILTON & SONS

ONE OF SORG PAPER CO.'S AUTOMATIC MICROMAX PH CONTROL PANELS

Glatfelter Finances Betterment Program

NEW YORK—Offering of 6,243 shares of 5-percent cumulative first preferred stock of P. H. Glatfelter Company is being made by a syndicate composed of Stroud & Company, Incorporated, E. H. Rollins & Sons, Incorporated and Graham, Parsons & Co. The stock is priced to the public at $101 per share plus accrued dividends.

Proceeds from the sale of these shares will be used to provide in part for expenditures required for an improvement program which is expected to increase the efficiency and productive capacity of the company's plant.

In addition, the company has placed privately with the New York Life Insurance Company $3,000,000 of first mortgage 3½ percent sinking fund bonds due May 1, 1967. This placement was arranged by Union Securities Corporation and Stroud & Company, Incorporated. The Company is also raising $500,000 through the sale of common stock to certain common stockholders.

The P. H. Glatfelter Company, of Spring Grove, Pennsylvania, is an outgrowth of a business originally established in 1864 (by Philip H. Glatfelter, grandfather of the present President) and is engaged in the manufacture and sale of chemical wood pulp papers, including book, bond, writing, mimeograph, tablet and lithograph papers.

Of the approximately $4,000,000 being raised by this financing, about $1,000,000 will retire currently outstanding debt and the balance will go towards the company's $3,500,000 expansion program. Annual mill capacity will be increased from 45,000 tons of paper to 60,000 tons. The company is also installing new boilers, turbines and other power equipment and improving its water shortage and stream improvement facilities.

In 1946 the company had net sales of $6,800,000 and net income of $375,000. During the first quarter of 1947 net sales totaled $2,240,000 and net income $122,000. Upon completion of this financing the company will have outstanding $3,000,000 first mortgage 3½ percent sinking fund bonds due May 1, 1967, 20,000 shares of 5 percent cumulative first preferred stock, $100 par value, and 150,000 shares of common stock, par value $10.

Thilco Foremen Discuss Waste Problems

KAUKAUNA, Wis.—Six members of the Thilco Foremen's Club of Thilmany Pulp and Paper Company discussed "Waste Problems" after a dinner meeting of the Club Monday evening, June 2, at the Elks clubhouse. The club will not hold a meeting which had been scheduled for July, but will resume meetings again in August.

P. H. GLATFELTER
Plans Mill Improvements

Hawley Sale Declared Off As Option Expires

PORTLAND, Ore. — Sale of Hawley Pulp & Paper Company to eastern buyers identified with the Claremont Paper Corporation, of Claremont, N. H., has been cancelled and a $300,000 initial payment ordered forfeited. John H. Smith, Hawley president, said that no further payments had been made by the prospective buyers. The initial payment will be distributed pro rata to stockholders who had deposited for sale 195,000 of the firm's 200,000 shares, Smith said.

Dryden Paper Profits Best In Company's History

TORONTO—Satisfactory results for the year thus far have been obtained by Dryden Paper Co. and are expected to be maintained, Dow, Jones learns. The profit and loss statement for March and April revealed the best results in the history of the company for these months.

Price Bros. Stock Split Rumored On The Street

TORONTO—Talk on the Street today hinted the possibility of a stock split soon for Price Bros. The stock has been strong lately. Another angle to the yarn is that there will be no split but refinancing of some form or another.

Huyck Profit Tops Million

ALBANY, N. Y.—F. C. Huyck & Sons and subsidiary, Kenwood Mills Limited, report net sales, $11,126,470 for 1946; net profit, $1,021,972, equal, after payment of dividends on Class A Preferred stock, to $28.17 each on 33,334 Common shares.

Import Committee Reports on Rulings

NEW YORK—The Bureau of Customs has issued a ruling instructing collectors to compute duties on imported German merchandise on the basis of their export value in dollars prevailing at the time of shipment, says Warren B. Bullock, manager of the Import Committee of the American Paper Industry in a report to the industry. Normal procedure is to compute duties on the basis of the freely offered price in the country of exportation, but because of the distorted German commercial picture this procedure is deemed by the Bureau to be impracticable. The new rule applies to all exports from the British and American zones, and is expected to greatly increase shipments from Germany to this country.

Innersoling board imported from Canada for the shoe industry has been found to be heavily loaded with latex and the question now before Customs officials is whether this material should be dutiable at the higher rate for rubber latex, the component of chief value, or at the lower rate for paperboard.

Customs officials are seeking to determine the proper duty rate for a Canadian paper described as clay loaded rotogravure, claimed to be dutiable at the low rate for printing paper. Pending investigation, the Import Committee has taken the position that the merchandise is machine-coated, and dutiable at the rate for coated paper.

Canadian paper for stenographers note books has been held to be properly dutiable as writing paper at 3 cents per pound and 15 percent, and not as pencil tablet paper at one-fifth of 1 cent per pound and 5 percent.

Nine shipments of writing paper imported at Los Angeles have been held to be dutiable without the inclusion of the British Purchase Tax as part of the dutiable value.

A shipment of 1,700 rolls of wrapping paper has been received from Newfoundland, the first such importation on record.

Hubbs Conference Finds Good Business Ahead

CLEVELAND—The Hubbs Houses held a two-day quarterly business conference May 27-28. An inspection of the Cleveland warehouse of the Hubbs & Howe Company was followed by business meetings. The afternoon of the second day was devoted to golf at the Cleveland Country Club. Continued good business is expected to be experienced during the balance of the year, as indicated by reports from the various markets. The meeting was declared the most constructive ever held by Hubbs. Officers of the several branches expressed great confidence in outlining plans for the future. The next quarterly meeting will be at the offices of Interstate Cordage & Paper Company, Pittsburgh.

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Eagle Lodge Calls Strike Vote Meeting

HOLYOKE, Mass. — The four-man negotiating committee of Eagle Lodge of Papermakers, deadlocked with mill owners over the execution of a new contract, was authorized Sunday night, June 1, to call a special meeting of the lodge June 8 to take a strike vote providing union demands are not met by Thursday noon.

Announcement of this action was made by Robert C. Cameron, lodge president, who is also on the negotiating unit. Others are Andrew Beaton, past president; Edward Zakrezewski, vice-president; and William McFadden, recording secretary.

In the event company executives reject union terms by the deadline and papermakers later vote favorably on the strike issue, the walkout will be staged next Monday morning, Cameron said.

Paper Mill Workers Union, Local 226, will meet Tuesday night and is expected to authorize its committee along the same lines. Both bodies, which deal jointly with industrialists on contracts, met Sunday afternoon in a session that jammed Caledonian hall.

While the negotiating committee was reluctant to review the session in detail, union men said they had discarded an initial bid for a flat 20-cent hourly raise across the board, and appeared willing to settle for a 15-cent hourly hike for workers currently paid up to 84½ cents hourly, and 12½ cents for those making over that rate.

Spokesmen added that management had submitted a "final counterproposal" offering a 10-cent hourly boost for those paid up to 84¼ cents and eight cents for workers making above that figure. In a first counter offer, they had proposed a flat five-cent increase which was later upped to eight and six cents contingent on respective hourly rates. Other issues relative to paid holidays, vacation pay, revised rates for millwrights, health and accident insurance and other items were said to have been agreed upon by both parties.

Hammermill Unions Accept 15-Cent Wage Raise

Hammermill Paper Company union employes have a 1947 contract with the firm which grants, among other items, a 15-cents per hour wage hike.

Other proposals in the contract include time and one-half for Saturdays on a work week schedule, double time for Sundays, 40 hours guaranteed par per week, vacations and other standard provisions.

Paper Makers Holds a Party

KAUKAUNA, Wis.—Local No. 20, Paper Makers, held a party June 8 for their wives and invited guests at the American Legion hall. The party followed a business meeting. A 5 o'clock supper was served and the evening was spent in dancing and at cards.

Mills Work Overtime Seek Help To Meet Orders

COHOES, N. Y.—Among the prominent firms in the district seeking help during the past few weeks are the Fort Orange Paper Co., Castleton, Embossing Co., Albany, F. C. Huyck & Co., Rensselaer, Union Bag & Paper Co., and others. Virtually all mills are booked ahead with orders with overtime shifts being observed by many.

International Paper Wage Raised 14 to 23 Cents

COHOES, N. Y.—Several thousand employes of the International Paper Co. will receive wage increases from 14 to 23 cents an hour under terms of an agreement which became effective June 1. The new contract was negotiated following conferences between company officials and labor leaders. The new wage clause in the book and bond division contract raises the base pay to about $1.04 an hour and covers the branch mills at Palmer, Ticonderoga, Niagara Falls and Tonawanda, N. Y.; Livermore Falls, Me., York Haven, Pa. The employes were represented at the negotiations by labor representatives of the International Brotherhood of Papermakers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. It was stated by labor leaders that the new agreement completed negotiations with the company for wage increases totaling about $10,000,000 yearly.

Eau Pleine Reservoir Filled to Capacity

WAUSAU, Wis.—For the first time this year, the Eau Pleine reservoir of the Wisconsin Valley Improvement Company was filled to capacity, 4,551,000,000 cubic feet on Sunday, June 1. Spirit reservoir, near Tomahawk, also was filled to capacity. Other large reservoirs filled to near their capacity are Rainbow, Willow and Rice reservoirs in Oneida county.

Total reserves on June 1 were 15,701,000,000 cubic feet, amounting to 92.26% of the total capacity of the reservoirs. The storage compared with 16,229,000,000 cubic feet on the same date in 1945 and 9,412,000,000 on the same date in 1946.

Badger-Globe Foremen Plan Family Picnic

NEENAH, Wis.—The Badger-Globe Foremen's Club held a dinner meeting Monday evening, June 9, at the American Legion clubhouse, Oshkosh, Wis. Plans were discussed for sponsoring a family picnic July 20.

Dexter Ups Pay Rate Grants Extra Holiday

DEXTER, N. Y. — The Dexter Sulphite Pulp and Paper Company has signed a new contract with two unions calling for a 14-cent per hour increase in wages "across the board" and one additional holiday per year, union officials announced.

Floyd C. VanDeusen, Schenectady, representing Local No. 121, International Pulp, Sulphite and Papermill Workers, A.F.L., one of the two unions, made the announcement. The other union affected is Local No. 67, Papermakers Union, A.F.L., which Leonard Gagnon of Utica represented in the negotiations.

The wage provision in the new contract is retroactive to May 1, according to Mr. VanDeusen, who said the previous agreement between the unions and the company was scheduled to expire June 1. The signing of the new contract took place here with Frank J. Lang, general manager, and Attorney A. Raymond Cornwall, vice-president and a director, appearing for the Dexter mill management.

Mr. VanDeusen estimated that 200 employes would be affected by the new agreement, which raises wages of all classifications of workmen by 14 cents per hour. The old rate for the lowest classification was 83 cents. Other rates ran as high as $1.40 depending upon the grade and length of service of the employes.

Armistice Day, Nov. 11, has been added to the holiday list, according to the new contract. Previously, only July 4, Labor Day and Christmas were regular holidays.

In addition to the specific wage and holiday benefits, vacation time is increased, under certain circumstances, to three weeks for men in the company's employ for ten years or longer. The three-week vacation is conditioned on the proviso that the granting of the third week will not interfere with production, according to Attorney Cornwall.

Mr. VanDeusen said the vacation clause also provided for one week for men with from one to five years' service and two weeks for those in the five to ten-year brackets.

Thilco Foremen Discuss Production Shrinkage

KAUKAUNA, Wis.—The Thilco Foremen's Club met Monday afternoon, June 2, at the Elks club rooms. Manufacturing shrinkages and losses in productive processes were the topic of the program portion of the meeting. The discussion was led by a number of foremen and the subject was open to general participation by all members. A business meeting preceded the dinner. The club consists of foremen of the Thilmany Pulp and Paper Company.

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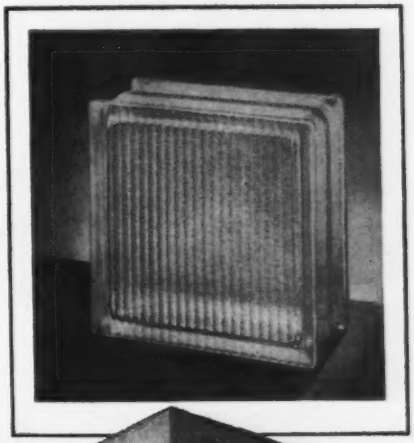

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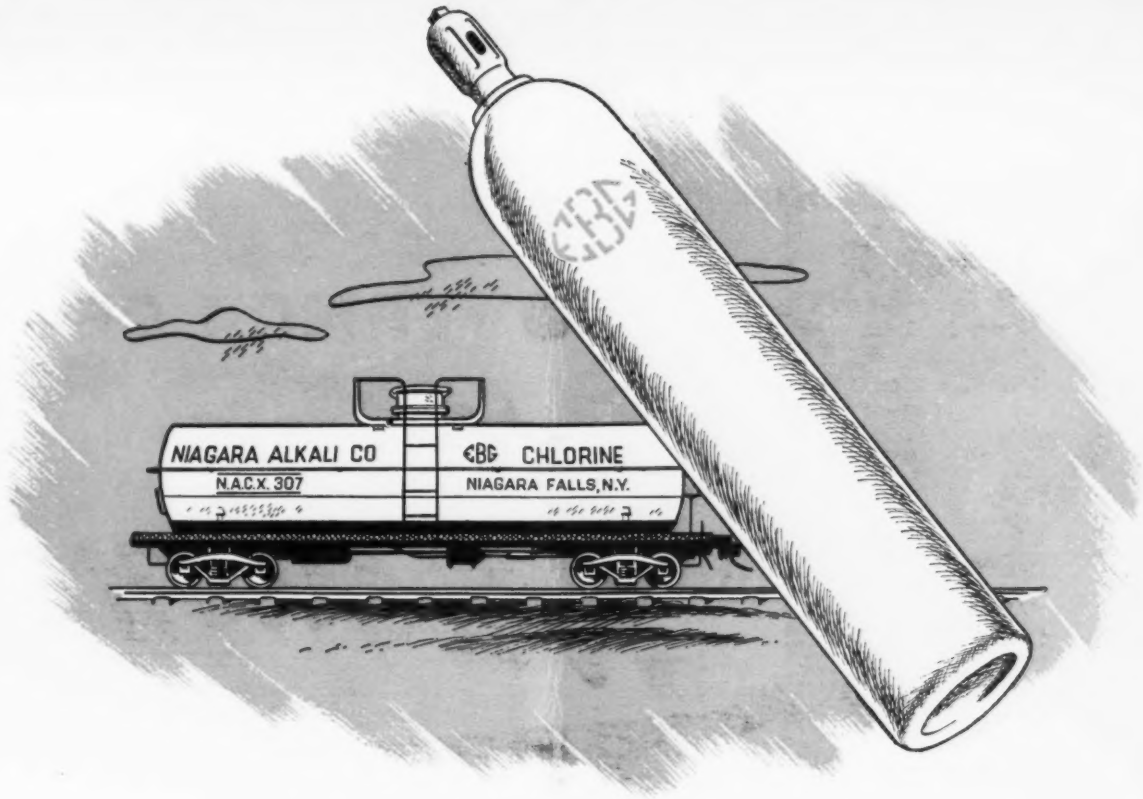

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Past Prexies Throw a Party for the Boys

LOS ANGELES—Past presidents of the Paper Mill Men's Club of Southern California threw a party for the club members on May 29th at the Inglewood Country Club. Frank Philbrook of Graham Paper Company, chairman of this meeting, was assisted by the club's eleven past presidents.

The Past Presidents' Party was a generous gesture on the part of the self-styled "has beens," just because they "wanted to do something for the members." Jerry Thiem, Milwaukee Lace Paper Company, won the first leg of the Past Presidents Golf Trophy (called the PP cup for short), a vessel of old fashioned design, white enamel, shallow and wide, with a flared rim and one large handle.

John Kirby of Kirby Sales—General Chairman of next September's Paper Mill Men's Hi-Jinks—seized the occasion to announce the names of the Chairmen who will serve under him in making this coming affair an outstanding Hi-Jinks. Committeemen named were: L. A. (Bill) Gardiner, Nekoosa-Edwards, vice-chairman; M. K. Rawlings, National Paper Products Sales, chairman sweepstakes committee, with B. E. Calhoon, Marathon Corporation as assistant; J. C. Layton, Towlsaver, finance; Tom Meyers, Atlas Paper Specialties, and Roland Wolf, California Cotton Mills, golf; Charles E. Jones, Western Package Service, entertainment; Robert E. Pentz, Continental Bag Specialties, door prizes; Harry Huntsman, Western Waxed Paper, program; Paul May, Pomona Paper Products, softball; Raymond J. Sterling, R & R Paper Converters, arrangements; J. Dwight Tudor, Independent Paper Box Manufacturers, greeters. The party will be held at the Riviera Country Club, September 19, 1947.

Cleveland Container Studies Water-Resistant Material

OGDENSBURG, N. Y.—Reports that personnel of Cleveland Container company, Ogdensburg division, Plant No. 2, were working on a new water-resistant material were confirmed here by Gerald W. Mulder.

Mr. Mulder admitted that the company was experimenting with water-resistant materials which could be used in containers manufactured by the plant, but refused to state whether or not orders were now being taken on the material.

That development of the new material would have any bearing on the reopening of Plant No. 1 on Main Street, Mr. Mulder refused to state. He declared that at the time of the previous closing down of Plant No. 1, he had revealed that the plant would be reopened in the future.

JOHN KIRBY
who heads, as general chairman, Southern California Hi-Jinks party.

Foster Wheeler Names Bell To be Dallas Sales Head

DALLAS, Tex.—J. H. Bell, assistant vice president of Foster Wheeler Corporation and head of its public relations and advertising department for over two years, has been appointed sales manager of the company's newly-created Dallas District. Making his headquarters in Dallas, Mr. Bell will be in charge of a district that embraces parts of Texas, Oklahoma, Mississippi and all of Arkansas.

Mr. Bell has been with the organization since 1923 when he started in the Carteret, N. J., plant as a cadet engineer in the machine shop. He worked in various departments until 1926 when he became associated with the New York sales. In July 1935 he was made sales manager of the New York sales district.

Westminster Doubles Output; Adds Facial Tissues to Line

NEW WESTMINSTER, B. C.—Westminster Paper Company Ltd. has increased its production of paper specialties by 100 per cent through installation of a new super-speed paper machine, chief feature of a $1,750,000 expansion program, company officials announce.

The new machine makes possible the addition of facial tissue to Westminster products, and a new facial soft Purex roll. Production of napkins, towels, toilet tissue, printed bread wrappers and waxing paper has been increased.

Plans call for improvements to No. 1 machine, formerly the fastest running tissue machine in Canada.

SAPEYES Debate In Closed Session

CHICAGO—The western division of the Salesmens Association of the Paper Industry held a closed meeting on Monday noon, June 2, at the Hotel Sherman meeting rooms. It was reported that the meeting was scheduled primarily for the purpose of talking over matters of policy to be followed in the future. The "round table," was turned into a suggestion meeting, pet "gripes" were thrown up for grabs and the members took the opportunity to make constructive proposals as to betterment of the SAPEYE western group.

The speaker at the meeting a week ago, John W. Crosson of the Mead Sales Corporation, was exceptionally well received. Copies of his talk have been readied for distribution to members. The speaker stressed the importance of salesmen knowing the technical aspects of paper as a means of better equipping them for the time when real competition will again be in evidence.

Bert Fisher and Rondeau Warner were guests at this session of the Western division where it was also announced that the veteran George K. Gibson of Mosinee had tendered his resignation as chairman of the membership committee, a post he has filled most ably for many years. It seems a certainty that the SAPEYES will go the limit in endeavoring to convey to George Gibson their appreciation for his hard work and unswerving loyalty. Mr. Gibson will be succeeded by Stan Styles who becomes National Chairman of the Membership Committee.

Bridge Failure Blocks Pulpwood Route

ST. JOHNSBURY, Vt.—A small bridge on the main road to Sutton partially collapsed beneath the weight of a heavily loaded pulpwood truck being driven over the wooden structure. The truck, owned by Ray Parker of Lyndonville, used for hauling timber, reached the middle of the bridge before the timbers gave way beneath the rear wheels of the vehicle.

The rear end dropped into the small brook, causing part of the load to slip into the stream. The truck was salvaged by wreckers and did not suffer from its dunking.

Norwegian Newsprint Clears Through St. Lawrence Route

OGDENSBURG, N. Y. — The first load of newsprint to travel up the St. Lawrence river this year cleared through the Cardinal canal locks in the river enroute from Oslo, Norway, to Chicago. The "Ravnefjell," under the command of Capt. Steinswick of Oslo, was cleared through the lift locks at the Cardinal office after a seven-day run from the Gulf of Newfoundland and the entrance to the St. Lawrenee river.

Wisconsin River Valley Holds Safety Conference

WAUSAU, Wis.—E. A. Page of the Lakeview mill of Kimberly-Clark Corporation, Neenah, was among the speakers at the sixteenth annual Wisconsin River Valley Safety Conference here June 5. He expressed the opinion that management must accept its responsibility in the safety program, as it is first of all responsible for the plant housing, types and placement of machinery and other details of operations.

Several hundred persons attended the conference. Labor's interest in safety was stressed by Morris Weinberg, AFL representative from Milwaukee, who took occasion to praise the Ashland division of Marathon Corporation for having no lost-time accident between October 9, 1940, and May 4, 1946, during which time the plant showed a total employment equal to 1,900,212 man hours. Between May 6, 1946, to August 27, 1946, the plant record equalled 97,313 man hours without a lost-time accident. He urged a strong and militant course in which labor and management should participate jointly.

Voyta Wrabetz, Madison, chairman of the Wisconsin Industrial Commission, appealed to industry for increased vigilance so that Wisconsin's record of pre-war times might be restored. Wrabetz said that since 1911, when Wisconsin adopted its compensation plan for industrial accidents, a total of $137,000,000 has been paid out to workers in the state for injuries suffered during industrial employment. This is only one-fourth of what these accidents cost industry, he said.

R. S. Salisbury, Madison, director of the safety division of the state motor vehicle department, urged greater precaution in highway driving. He said that men who are aged between 45 and 50 years are the safety driving group, according to statistics. He said that at the age of 16 years drivers are shown to be nine times more reckless than those of this safest driving group.

Industrial Advertisers Charter Again Elects Collins

CHESTER, Pa. — Eastern Industrial Advertisers, the Philadelphia Chapter of the National Industrial Advertisers Association, has re-elected William Howes Collins, assistant advertising manager of Scott Paper Company, as chapter president for the 1947-1948 term. Collins, who served the association as president last year, is also a director of NIAA, the largest single advertising body of its kind, with chapters in the United States and Canada. The association devotes its efforts to the advancement of industrial advertising and marketing.

Newsprint Committee Urges Coosa Project

WASHINGTON—Representative Clarence J. Brown, Republican, of Ohio, chairman of the House Newsprint Investigating Committee, declared last week that the newsprint shortage problem might be "licked months ahead of what we originally thought."

Mr. Brown made the statement as the committee heard Army officers explain details of a proposed lease of 615 acres of the Alabama Ordnance Works, to the Coosa River Newsprint Company.

The committee has urged the War Department to expedite action on the lease to cover a forty-year period. Mr. Brown said his group would ask the Senate and House Armed Service Committees to approve the contract promptly.

Representative Sam Hobbs, Democrat, of Alabama, told the committee the Coosa River Company could produce 300 tons of paper daily once the contract was signed and the manufacturing machinery acquired.

Brig. Gen. John K. Christmas of the Army General Staff told the committee that the Army was ready to approve a forty-year contract, with the right to recover the property in the event of an emergency.

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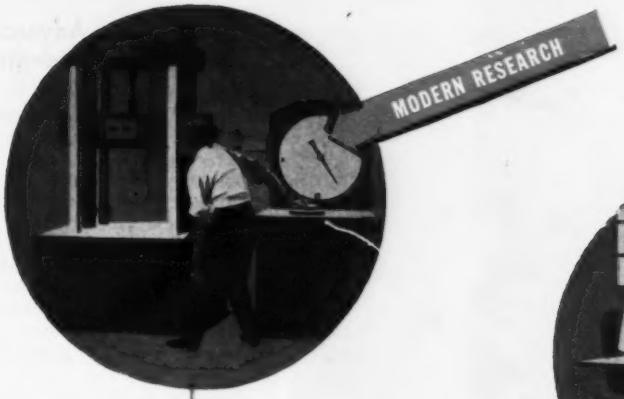

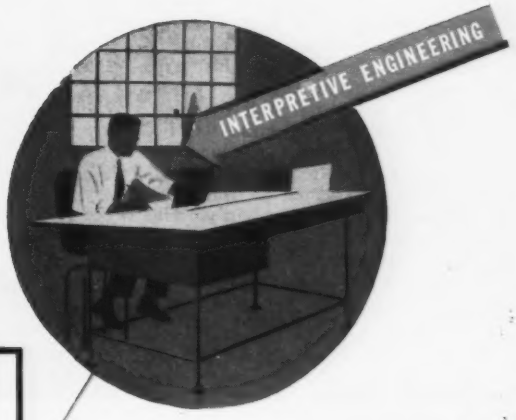

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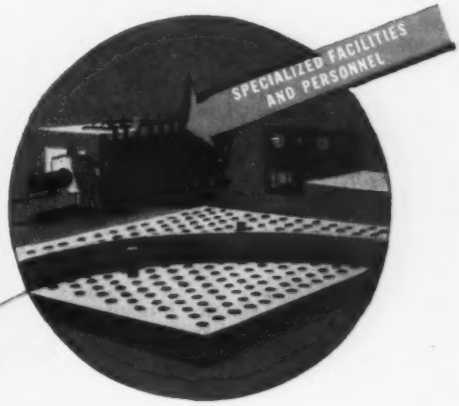

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Higbee Flies South to Survey Export Markets

TROY, N. Y.—Lester C. Higbee, sales manager of W. & L. E. Gurley, scientific and surveying instrument makers since 1845, left New York by plane last week for a market survey of South America. During his trip, which will be made entirely by air, Mr. Higbee will visit Puerto Rico, Brazil, Uruguay, Argentina, Chile, Peru, Bolivia, Ecuador, Colombia, The Canal Zone, Costa Rica, Salvador and Mexico. He is expected to return to the United States in mid-July. The purpose of the trip is to analyze Latin American requirements for U. S. instruments in cooperation with Gurley agents in the various countries.

LESTER C. HIGBEE

Allis-Chalmers Advances Four as Vice-Presidents

MILWAUKEE, Wis.—William A. Roberts and William C. Johnson have been appointed executive vice-presidents, respectively, of the tractor and general machinery divisions of the Allis-Chalmers Manufacturing Company.

Two new vice-presidents have been named for the two divisions of the company. They are Marshal L. Noel, vice-president and general sales manager for the tractor division, and J. L. Singleton, vice-president and director of sales for the general machinery division.

Roberts formerly was vice-president in charge of the tractor division while Johnson was vice-president in charge of the general machinery division. Noel formerly was general sales manager of the tractor division, and Singleton was manager of the general machinery division's district sales offices.

Pacific Mills Starts Bag Production

VANCOUVER, B. C.—Production of self-opening square kraft paper bags has now been started at Vancouver Converting Plant, Pacific Mills Limited. The bag plant started operations this Spring in the space previously occupied by the fibreboard box department. Four Series 80 Potdevin bag machines have been installed, with a production potential of more than 100,000 bags per day in sizes ranging from one-quarter pound to 35 pounds capacity.

The paper used is, Ocean Falls kraft, either machine finished or machine glazed medium stripe in basis weights from 25 to 50 pounds, and of various widths, depending on the types and sizes of bags being run.

Two types of paste are used, both made on special starch formulas, known as side-seam and bottom-seam paste. They are mixed and prepared in two electrically-activated mixing vats of 400 gallons capacity.

Hercules Promotes Long in Paper Makers Chemicals

WILMINGTON, Del. — Dr. John H. Long has been appointed assistant general manager of the Paper Makers Chemical Department of Hercules Powder Company. Dr. Long joined Hercules in 1933. For the next ten years he engaged in market development and technical liaison between Hercules and its customers. He assisted in the development of many of the company's synthetic resins, naval stores, and cellulose products. Among these were rosin-based synthetic resins for the paper and other industries.

He was placed in charge of the sales research division when that division was established in 1943, and continued in that position until December, 1946, when he transferred to the Paper Makers Chemical Department as special assistant to the general manager.

Hercules Enlarges Sale Of High Acetyl Acetate

WILMINGTON, Del. — Approximately 75 per cent of the cellulose acetate now being sold to the plastics industry by Hercules Powder Company is an improved type of cellulose acetate technically called high acetyl, Hercules officials disclosed this week. Hercules is one of the nation's major producers of cellulosic derivatives.

This improved cellulose acetate has gained such wide acceptance because it possesses excellent dimensional stability making it acceptable for a wider range of plastics applications than regular cellulose acetate. Hercules sells high acetyl acetate for the same price as regular acetate.

High acetyl cellulose acetate gets its name from the fact that the percentage of combined acetic acid is 56 or higher as compared with approximately 53 per cent in standard prewar acetate.

E. C. JACOBI

Sandy Hill Extends Its Kamyr Interests

HUDSON FALLS, N. Y.—The Sandy Hill Iron and Brass Works, through its connection with Paper Machinery Limited of Montreal and the Kamyr organization in Sweden, Norway and Finland, has arranged to have E. C. Jacobi, its midwestern representative also represent Paper Machinery Limited and Sandy Hill in the sale of Kamyr equipment for pulp mills, bleach plants, vacuum washers, thick stock pumps, agitators, pressure filters and other special equipment. Nils Klykken has come to Sandy Hill by arrangement with Kamyr in Sweden. A graduate of the University of Technology at Trondheim, Norway, he has been associated with the Kamyr organization as an engineer for the past twelve years.

Mr. Klykken's intimate knowledge of the Kamyr organization and its equipment is expected to add much to the expanding Kamyr building program that is under way at Sandy Hill.

NILS KLYKKEN

STOP corrosion losses

WITH STAINLESS STEEL

Less than twenty years ago the equipment and materials used in the sulfite pulping process required frequent replacement at considerable cost. Corrosion was to blame. Stainless Steel has changed the picture.

Today, Stainless Steel, properly selected to meet the corrosive conditions encountered, not only has reduced equipment deterioration resulting from corrosive attack but by safeguarding the product from harmful contamination has acted to ensure a higher quality, more useable product. This is especially true of fine papers, and with pulp to be used in rayon manufacture where specifications are close as to metal content.

In sulfite digesting equipment, in vacuum stills, heat exchangers and pipes and fittings handling hot sulfite liquors, Stainless Steel has definitely proved its economic superiority. It far outlasts the less effective materials formerly used—reduces unexpected and unnecessary shutdowns—practically eliminates the wastes caused by corrosion, contamination and discoloration.

U·S·S Stainless Steel—a perfected, service-tested Stainless—has long been used by leading makers for improving the performance and extending the life of pulp and paper mill equipment. But some grades are better suited than others for such applications. For that reason we suggest that you talk over your problems with our representatives. These men know what Stainless Steel can do. They will gladly advise you what analyses will give you best results, show you how to use U·S·S Stainless most efficiently. They'll also tell you when not to use it, if its use is not economically justified.

U·S·S STAINLESS STEEL

USS STAINLESS STEEL — UNITED STATES STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

7-964

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY (Warehouse Distributors), Chicago · UNITED STATES STEEL EXPORT COMPANY, New York

British Columbia Mills Improve Wood Handling Equipment

VANCOUVER, B. C.—Removing useless bark from wood slabs with the modern Summer Slab Barker and producing clean pupwood for delivery into one of their four Sumner Chippers is now an accomplished fact at the new Bloedel, Stewart & Welch Co. pulpmill at Port Alberni.

Capitalizing on the results they achieved with similar equipment in a number of pulpmills in the state of Washington, Sumner engineers designed a compact fabricated steel barking unit. This unique equipment first provides for the feeding of slabs into one end of the box-like compartment. The slabs then pass through a series of "shower baths," created by a stream of water being pumped at the rate of 1,200 P.S.I., through a number of specially designed nozzles, at 600 gallons per hour. The wood slabs are then pushed out as clean "debarked" pulpwood on to a conveyor which carries them into the chipper and grinds them into pulpwood chips.

The minimum of manhandling is required. The slabs, after being sawn from the logs at the head saws, are loaded on to a series of sprocket-like conveyor rolls and fed into the barking unit at 150 feet per minute. The slabs are guided into the barker with steel guides with several air-operated press rolls and a series of 12 specially designed feed rolls.

These are fitted with anti-friction bearings, driven with roller chains by means of a Sumner Helical Gear Speed Reducer, to convey the slabs through the totally enclosed steel cabinet, where the bark is entirely removed and clean wood is delivered at the other end. The nozzles designed and built at the Sumner plant vary in number and provide a stream of water at a velocity from 1,000 to 1,200 lbs. per square inch pumped by one of the Bingham Pumps being built in Canada by the Canadian Sumner Iron Works.

Following the initial unit at the Bloedel pulpmill at Port Alberni, B. C. where sawmill waste is now being made into valuable pulpwood, a second unit recently delivered was installed in March at the Universal Box Company's mill at Marpole, B. C. Here waste slabs from the box manufacturing plant are to be cleaned of bark, transferred into chips by a Sumner Chipper and sold to one of the pulpmills for pulp and paper manufacture.

At the Universal Box installation, water from the Fraser River will be utilized in the pumping operations by the pumps specially designed by Bingham Hydraulic Engineers at Portland and built at the Sumner plant. A Bingham booster pump will pump the water from the River and then a Bingham multiple-stage stainless steel pump will develop the high pressure required to complete the barking operation successfully.

A third Sumner Hydraulic slab barker is to go into production shortly at the B. C. Pulp Co. of Woodfibre, where it has been decided that the savings in wood with the hydraulic slab barking method over the knives and drum system will soon repay the cost of investment.

Canadian Sumner Iron has also supplied a fourth chipper ordered for the new Port Alberni pulpmill of Bloedel, Stewart & Welch. This was 110 inch diameter four knife disc, directly connected to a 350 H.P. electric motor, with the spout designed to feed whole logs 24 inches in diameter and the chips to be bottom discharged. This unit concluded the order for four chippers taken over 12 months ago which had been delayed in completion by a series of difficulties in securing essential materials, coupled with a three-month forced shut-down by striking C.I.O. moulders last summer. Every care was taken in its construction and it was an excellent piece of rugged and precision Sumner workmanship.

The first chipper, which was shipped several months ago, was just half the size—51 inches diameter, five knife disc—and is now in operation manufacturing barked slabs into pulpwood chips.

Two chippers followed later, each 72 inch diameter, six knife disc units, and are now installed awaiting delivery of other machinery to start the new pulpmill into production.

Floods Stop Operations At Racquette River

POTSDAM, N. Y.—Torrential rains did considerable damage to the Racquette River Paper Company plant recently. The water collected in large ponds to the south of the mill and poured onto the main floor of the building flooding machinery.

Three fire departments were called to the mills where they worked for over three hours with pumpers to remove water from the interior of the mill. The operation of two paper machines had to be suspended because of the flooded condition and the water ran down into the basement filling the elevator pit and surrounding the electric motors and equipment.

Pennsalt Plans $7,500,000 Expansion Program

PHILADELPHIA—Tentative plans for an expansion program costing approximately $7,500,000 were outlined in a proxy statement mailed to stockholders June 4 by The Pennsylvania Salt Manufacturing Company. Stockholders are being asked to vote, at a special meeting July 3, on a proposed increase of authorized stock of the Company from 1,000,000 shares of capital stock of a par value of $10 a share to 1,650,000 shares to be divided into two classes consisting of 150,000 shares of preferred stock with a par value of $100 a share and 1,500,000 shares of common stock with a par value of $10 each. At present there are 750,000 of the 1,000,000 shares of capital stock outstanding.

If the proposed plan is adopted, all of the shares of preferred stock and such unissued shares of common stock as are not reserved for conversion of preferred stock will be available for sale by action of the Board of Directors without further vote of the common stockholders.

Tissue Mills Staff Seeks Insurance

HOLYOKE, Mass.—The first of a series of conferences between representatives of labor and management of the two South Hadley mills of the American Tissue Co. was held recently and after preliminary discussion of union demands was adjourned for one week. Like the employees of the other Holyoke unionized mills, the American Tissue members of the Eagle Lodge of Papermakers demand a health and accident insurance program and the dues checkoff. Their wage increase request is for 15 cents an hour, five cents less than that in the other unionized mills.

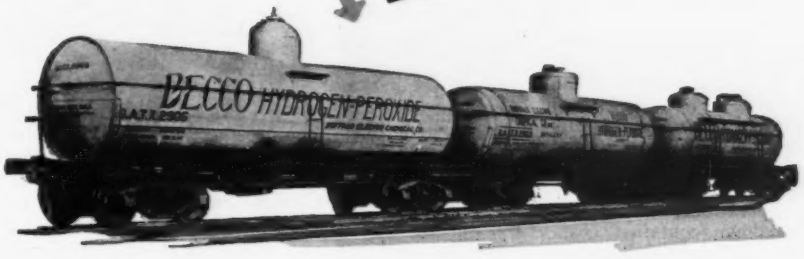
Appearing for the company were Benjamin F. Perkins, Sr., president; Judge Philip O'Brien and Atty. Bertha Dean, personnel manager. Edward M. Moore, international organizer, headed the labor group.

Hendrick Appoints Buckley To Pittsburgh District

CARBONDALE, Pa.—The Hendrick Manufacturing Company, producers of perforated and fabricated metals, announces the appointment of H. H. Buckley as its Pittsburgh district manager, filling the post left by the recent death of Bruce G. Shotton. The offices of the company will be maintained in the Gulf Building, Pittsburgh.

Mr. Buckley is a native of Pittsburgh and, prior to joining the Hendrick organization, had been associated for a number of years with Heyl and Patterson, Inc., of Pittsburgh, in the engineering and engineering sales departments.

From single carboys ... to a fleet of tank cars



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St. Regis Bag Filler Reduces High Cost

NEW YORK — Confronted several years ago with demands by both large and small manufacturers for a low-cost machine which would give them the advantages of mechanized industrial packaging in multiwall paper bags, engineers of the St. Regis Paper Company set to work to design equipment to fill the need.

In 1944 the job was completed, and the first of these new machines—designated the 100-LS valve bag filling machine—went into commercial operation. Today, more than 100 units are in use in the chemical, food, and feed industries, according to R. P. Bushman, vice-president of the St. Regis Sales Corporation. He added that more than 30 machines are on order for immediate delivery.

"This record clearly shows how successfully this inexpensive, widely adaptable machine has met the requirements for which it was designed," he said.

The 100-LS machine is now used for the packaging of more than 30 industrial products. In eliminating the use of fiber drums, fabric bags, steel drums and other containers, this versatile machine is used to package various commodities in both large and small operations. It not only speeds up packaging operations, but at the same time cuts down container costs through the use of multiwall paper bags, Mr. Bushman said. In addition, labor costs are substantially reduced.

Typical installations of this machine show, however, that there are other advantages of the mechanization it makes possible.

In many manufacturing plants, dust generated in the packaging operation is a hazard. This is frequently true in the packaging of some chemicals. In these plants fiber drums, wood or steel barrels, fabric bags or burlap bags were filled from a spout or chute.

Either method not only made a dusty operation, but also was inefficient from the standpoint of the amount of labor required, because each of these containers required time and labor for closing. In some cases, extra labor was required to "shake down" the contents of the container.

The mechanized packaging operation made possible by the 100-LS packer and paper valve bags eliminates the dusty packaging as well as the slower closing methods. Valve bags are factory closed at both ends and a small opening or valve is left in one corner. It is through this valve that the bag is filled. The weight of the contents of the bag automatically closes the valve at the end of the fill-operation, thereby eliminating hand-closing methods. A special device on the bag filling machine "settles" the contents during the filling operation.

Mr. Bushman pointed out that many manufacturers, carrying their mechanized packaging a step further, have installed conveyor systems to handle the steady flow of filled bags. In other instances, labor-saving fork lift trucks have been added to the plant's equipment to transport the neat palletized loads of filled bags. In many cases, such handling equipment was impractical when using other containers.

With the 100-LS packer, which is designed to handle charges up to 100 pounds, two methods are used to insure proper weights. In the first, the machine is placed on a platform scale which weighs the material and automatically cuts off the flow when the correct weight is reached. In the second method, the flow of material is adjusted to a predetermined speed and then cut off by a timing device at the proper amount.

By various combinations of these arrangements, seven types of installations can be made, thus giving the machine its notable flexibility for the packaging of many different materials at low cost.

Some of the first machines were used in the packaging of ready-mixed doughnut flour. They were set up in tandem with one operator to handle two machines. It was found that the previous packaged output of 9,000 lbs. in 200-lb. barrels and 150-lb. jute bags was increased to 18,000 lbs. per hour when the machines were installed. Instead of the six men formerly required for the operation, only three were needed when using bag filling machines. The over-all cost of packaging per 100 pounds was cut exactly in half—from 2½ cents to 1¼ cents. This particular manufacturer now has installed twenty 100-LS packers.

"The outstanding merits of the machine," Mr. Bushman explained, "are its simplicity of operation, its low cost, and its flexibility of application to meet the exact needs of each user. In contrast to the company which has installed twenty of these machines, is the small cocoa plant where one operator with one machine packs the entire output with ease, cleanliness, and economy."

Products now being packaged with the 100-LS include: powdered alcohol, pigments, acid sodium pyro phosphate, magnesium silicate, soap powder, detergents, rubber accelerators and anti-oxidants, graphite, barium salt, naphthylsalicylate beta, chlorinated paraffin, activated carbon, alumina hydrate, disodium and tetrasodium phosphate, zinc sulphate, pulverized resin, lead oxide, stearate, dry resin size, dehydrated manure, carbon black, flour, soya flour, flour mixes, cocoa powder, dextrose, feeds, and alfalfa meal.

B. F. D. Strike Threat Looms for July 4th

OGDENSBURG, N. Y.—A threat of a Fourth of July strike at the Berst-Forster-Dixfield pulp and paper mill plant appeared more imminent with the rejection, for the second time, by the union, of a B.F.D. proposal for settlement of a wage dispute over the expiring June 4 contract. Meeting in a closed session at the plant, union officials, delegates and representatives of the B.F.D. headquarters, met a stalemate in proceedings when the union rejected the company's offer of a five cent per hour wage boost and tried to inject an increase in hours into the new agreement.

The union had previously demanded 25 cents per hour wage boost, shift differential, and a better vacation plan. The B.F.D. company had offered them five cents per hour and an increase in hours.

The increase in hours would give day workers a 48-hour week and the tour workers, varying shift employes, a 56-hour week, keeping the plant in operation on a seven-day week basis.

The union had demanded, through its representative, Floyd C. VanDeusen, a 25 cent per hour wage boost, which would increase the base rate of 75 cents per hour to $1 per hour, and graduate according to the skilled status of the employe.

They also asked a shift differential of from four to six cents per hour, a common practice throughout the country, and at present employed in the Plattsburgh divisions of the B.F.D. company.

Among other demands made by the union are one for six holidays annually, with pay. Mr. Van Deusen pointed out recently that while the local B.F.D. plant has no holidays with pay, 99 per cent of the nation's union plants have at least three paid holidays and in some instances eleven.

Also requested is a better vacation plan wherein one-year employes would be entitled to one week's vacation, annually, and three-year employes a three-week vacation, and a membership clause, centered around contracts, which would include a 30-day probation period for new employes.

A clause is also entered in the union contract that the employes would be willing to settle for rates comparable to the 48-hour week, now employed, if a cut in hours were made. It has been pointed out that if the company were to agree on the 25 cent per hour clause, the union and employes would agree to the 56 and 48 hour work periods.

1. More economical identification
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7. Elimination of make-ready in the labeling operation

If you have labeling problems, you'll welcome the operating efficiency and economy of Monsanto's Thermo-Plastic Coating for heat sealing labels.

Expensive and unsatisfactory inserts, bands and glued labels are eliminated. Monsanto Thermo-Plastic coated labels afford maximum opportunity for colorful, sales-making messages. For bagged merchandise, they provide a positive seal which makes tampering impossible and eliminates the possibility of contamination.

For details on better labeling with Monsanto Thermo-Plastic Coating, or advice on any of your packaging problems, address: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield 2, Massachusetts.

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IMPORTS

NEW YORK IMPORTS

WEEK ENDING JUNE 7, 1947

SUMMARY

Newsprint	19,463 rolls
Printing Paper	2 cs.
Wall Paper	10 pcls, 22 cs.
Filter Paper	35 cs.
Pith Paper	10 cs.
Wrapping Paper	231 bls.
Sulphite Paper	187 rolls
Kraft Paper	68 rolls
Cardboard	16 cs.
Writing Paper	23 cs.
Parchment Paper	11 cs.
Strawboard	167 rolls
Miscellaneous Paper	1 roll, 2 cs.

NEWSPRINT

H. G. Craig Co., Donpaco, Donnacona, 370 rolls.
News Syndicate Co., Inc., Alcoa Pointer, Baie Comeau, 6810 rolls.
H. G. Craig Co., Newscarrier, Donnacona, 376 rolls.
News Syndicate Co., Richard J. Barnes, Thorold, Ont., 1200 tons.
H. G. Craig Co., Kermic, Donnacona, 383 rolls.
H. G. Craig Co., G. T. D., Donnacona, 372 rolls.
H. G. Craig Co., Donpaco, Donnacona, 369 rolls.
N. Y. Journal American, Markland, Liverpool, N. S., 673 rolls.
N. Y. Tribune, Markland, Liverpool, N. S., 1659 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 675 rolls.
Brooklyn Eagle, Markland, Liverpool, N. S., 737 rolls.
Washington Post, Markland, Liverpool, N. S., 2370 rolls.
Sun, Arlington, Va., Markland, Liverpool, N. S., 23 rolls.
Washington Daily News, Markland, Liverpool, N. S., 140 rolls.
News Syndicate Co., Inc., Brian, Thorold, Ont., 1610 rolls.
News Syndicate Co., Inc., Kay, Thorold, Ont., 1696 rolls.

PRINTING PAPER

H. Reeve Angel & Co., Inc., Port Melbourne, London, 2 cs.

WALLPAPER

Kersten Shipping Co., Thomas W. Owen, Havre, 1 cs.
Lansen Naeve Co., Thomas W. Owen, Havre, 2 cs.
R. F. Downing & Co., Thomas W. Owen, Havre, 3 cs.
William Trading Corp., Argentina, Copenhagen, 2 pcls.
F. Henjes, Inc., Argentina, Copenhagen, 8 pcls.
American Express Co., Lt. Jean Muir, Havre, 16 cs.

FILTERPAPER

H. Reeve Angel & Co., Inc., Port Melbourne, London, 24 cs.
E. H. Sargent & Co., Gripsholm, Gothenburg, 11 cs.

PITH PAPER

Chase National Bank, Flying Cloud, Shanghai, 10 cs.

WRAPPING PAPER

E. M. Warburg, Inc., Gripsholm, Gothenburg, 231 bls.

SULPHITE PAPER

Resolute Paper Products Corp., Gripsholm, Gothenburg, 187 rolls.

KRAFT PAPER

Green Kriegsman Paper Co., Gripsholm, Gothenburg, 68 rolls (glazed).

CARDBOARD

Butler American Paper Co., Coastal Stevedore, Trujillo City, 16 cs.

WRITING PAPER

Lansen Naeve Co., Thomas W. Owen, Havre, 23 cs.

PARCHMENT PAPER

G. G. Lippelgoes, Leerdam, Antwerp, 8 cs.
F. C. Strype, Inc., Midland Victory, Antwerp, 3 cs.

STRAWBOARD

Packard Container Corp., Saginaw Victory, Antwerp, 143 rolls.
Premier Decorations, Inc., Pierre Victory, Antwerp, 24 rolls.

MISCELLANEOUS PAPER

Rohner Gehrig Co., Thomas W. Owen, Havre, 1 cs.
Resolute Paper Products Corp., Gripsholm, Gothenburg, 1 roll.
Curacao Trading Co., Gripsholm, Gothenburg, 1 cs.

RAGS, BAGGINGS, ETC.

Irving Trust Co., Port Melbourne, London, 8 bls. new colored cottons; 36 bls. old khaki webbing.
(———), Port Melbourne, London, 172 bls. old cotton rags.
A. W. Fenton, Macalester Victory, Cantania, 211 bls. dark cotton rags.
A. DeVries, Pierre Victory, Antwerp, 97 bls. bagging; 102 bls. used bags.
(———), Horseshoe Splice, Vera Cruz, 63 bls. rags.
National City Bank, Flying Cloud, Genoa, 65 dark cotton rags.
Amtorg Trading Corp., Rossia, Odessa, 280 bls. cotton waste.

PICKERWASTE

Atlantic Gelatin Co., Leerdam, Antwerp, 82 pkgs.

PORTLAND IMPORTS

WEEK ENDING JUNE 7, 1947

J. Andersen Co., Vasaholm, Sundsvall, 3300 bls. kraft sulphate pulp.
Cellulose Sales Co., Vasaholm, Sundsvall, 3750 bls. kraft sulphate pulp; 1920 bls. dry sulphate pulp.
Pagel Horton & Co., Vasaholm, Gefle, 1500 bls. woodpulp.
Stora Kopperberg Corp., Skutskar, 9530 bls. dry woodpulp.

BOSTON IMPORTS

WEEK ENDING JUNE 7, 1947

Pagel Horton & Co., Vasaholm, Gafle, 2750 bls. woodpulp.
Mead Sales Co., Vasaholm, Sundsvall, 960 bls. dry sulphate pulp.
Cellulose Sales Co., Vasaholm, Sundsvall, 690 bls. dry sulphate pulp; 6900 bls. kraft sulphate pulp; 62 bls. dry sulphate pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 7, 1947

Castle & Overton, Inc., Saginaw Victory, Antwerp, 48 bls. cotton rags.
Herman Adlerstein, Flying Cloud, Genoa, 120 bls. dark cotton rags.
Bank of New York, Flying Cloud, Genoa, 115 bls. blue cotton rags.

Lukens Group Names Mullestein As Manager of Field Sales

COATESVILLE, Pa.—Appointment of W. E. Mullestein as manager, field sales for Lukens Steel Company and subsidiaries, By-Products Steel Corporation and Lukenwald, Inc., Coatesville, Pa., has been made public by J. Frederic Wiese, vice-president in charge of sales of the three companies. Mr. Mullestein succeeds Arthur J. O'Leary, recently deceased.

Mr. Mullestein has been Manager of the Coatesville District Sales office of Lukens, By-Products and Lukenweld since September, 1945. He is a graduate of Cornell University with a degree in Civil Engineering, and also attended New York University Law School.

After three years with a firm of patent attorneys in New York City, Mr. Mullestein joined the Austin Company, New York, as field engineer and construction superintendent in charge of the construction of industrial plants in various sections of the eastern United States. From 1939 to 1942 he was associated with the American Iron and Steel Institute, New York, as construction engineer and secretary of the committee on building codes.

Early in 1942, Mr. Mullestein received leave from the Institute to join the War Production Board, Washington, where in the Facilities Bureau he held successfully the positions of head industrial and construction specialist, chief of the material and equipment requirements branch, and director of the progress and scheduling division.

The steam gauges tell how you can step up production with Lukenweld Jacketed Drier Rolls

(PATENTS APPLIED FOR)

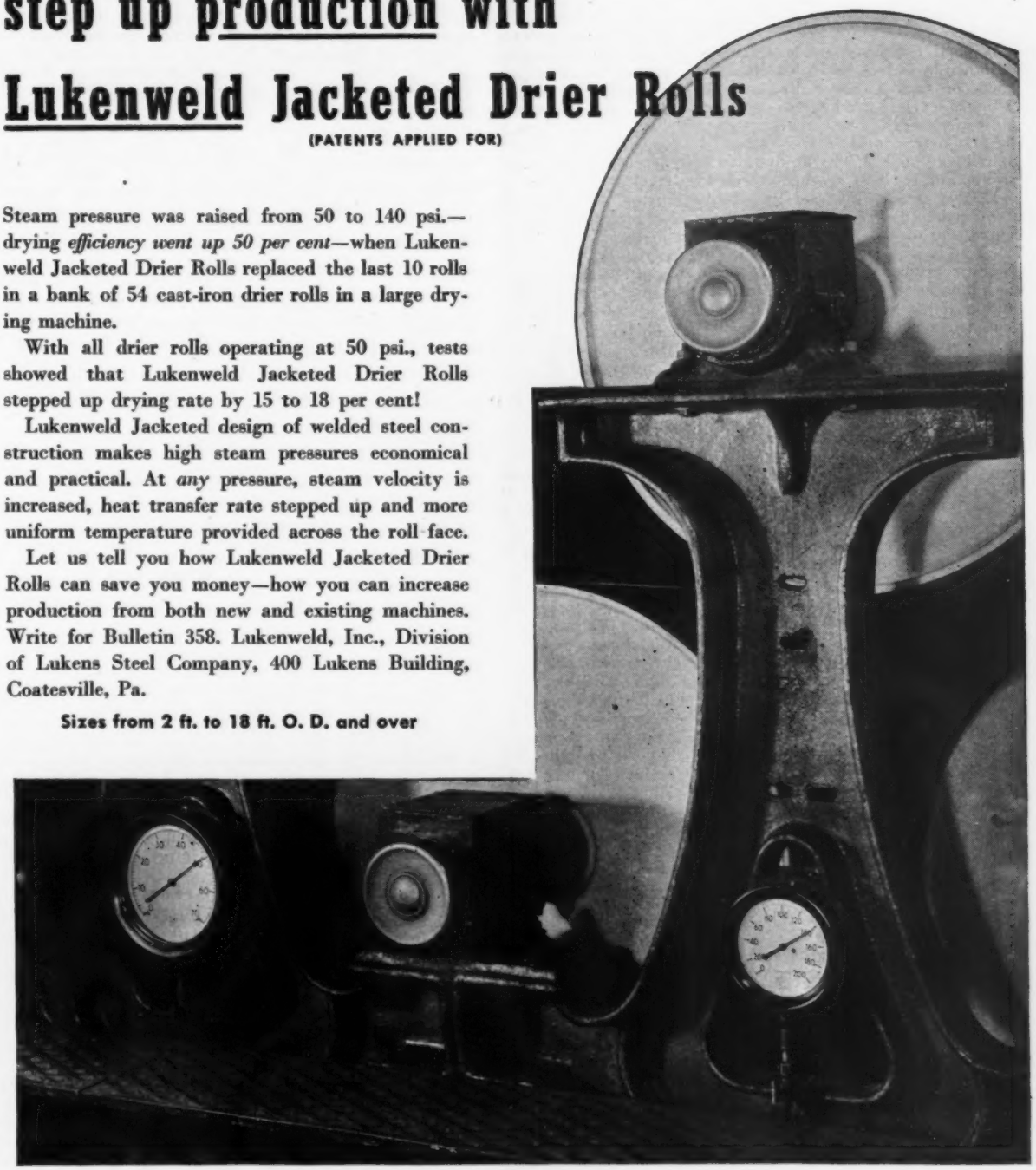
Steam pressure was raised from 50 to 140 psi.—drying *efficiency went up 50 per cent*—when Lukenweld Jacketed Drier Rolls replaced the last 10 rolls in a bank of 54 cast-iron drier rolls in a large drying machine.

With all drier rolls operating at 50 psi., tests showed that Lukenweld Jacketed Drier Rolls stepped up drying rate by 15 to 18 per cent!

Lukenweld Jacketed design of welded steel construction makes high steam pressures economical and practical. At *any* pressure, steam velocity is increased, heat transfer rate stepped up and more uniform temperature provided across the roll face.

Let us tell you how Lukenweld Jacketed Drier Rolls can save you money—how you can increase production from both new and existing machines. Write for Bulletin 358. Lukenweld, Inc., Division of Lukens Steel Company, 400 Lukens Building, Coatesville, Pa.

Sizes from 2 ft. to 18 ft. O. D. and over



Working surfaces of Lukenweld Jacketed Drier Rolls may be carbon or low alloy steel, solid stainless steel, Monel or other nonferrous metals, or clad steels.

LUKENS
LUKENWELD DIVISION

LUKENWELD, INC.

DRIER ROLLS AND DRYING MACHINERY FOR MORE PRODUCTION

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 11, 1947.

Demand for paper and paper board as shown by orders, order backlogs and stocks on hand at the mills continues at high levels. Production of paper and paperboard in the United States in the first four months of 1947 was at an annual rate of 21,300,000 tons. . . . Production in 1946 reached a record 19,157,208 tons. This was 10 percent greater than 1945's output and 7 percent ahead of the 1941 level, the previous high. . . . If the present rate of domestic production continues overall, consumption this year will be near 25 million tons. Some 3,700,000 tons of newsprint will be imported. This would be just over 350 pounds per capita or an increase in 1947 over 1946 of over 30 pounds per capita. . . . Some sections report a decrease in the demand pressure for certain items although this is spotty. Minneapolis reports demand for heavy paper, paperboard and boxes is off considerably since March 1. . . . New England reports a decreased demand for "luxury" wrappings for baking products. . . . New Orleans reports allocations only for kraft paper, butchers wraps and toilet tissues, all other grades moving in a free market. . . . Pacific Coast mills are adding new integrated capacity to serve local consumers. This was made necessary by the greatly enlarged market caused by increased per capita consumption of paper for general use and expansion of packaging industries, notably frozen foods as well as certain paper products. Delays in securing equipment are keeping this construction work behind schedule but most of the projects are expected to be completed by early fall.

The index of general business activity for the week ended May 31 declined to 145.8 from 146.4 in the previous week, compared with 116.0 for the corresponding week in 1946. The index of paperboard production rose to 209.9 from 186.2 in the previous week, compared with 164.7 for the corresponding week in 1946.

Paper production for the week ended May 31 was estimated at 104.7 percent, compared with 105.1 for the preceding week, with 96.3 for the corresponding week in 1946, with 87.9 for 1945, with 86.1 for 1944, and with 90.2 percent for the corresponding week in 1943.

Paperboard production for the week ended May 31 was 98.0 percent of capacity, compared with 101.0 percent for the preceding week, with 85.0 for the corresponding week in 1946, with 93.0 for 1945, with 93.0 for 1944, and with 92.0 percent for the corresponding week in 1943.

United States imports of paper, paperboard and paper products, as a group, during the first quarter of 1947 showed a general increase over those in the corresponding quarter of last year. On the contrary, imports of the raw material, pulpwood and wood pulp, declined in similar comparisons. . . . After a steady quarterly growth during 1946 to the fourth quarter peak of 972,617 tons, imports of paper in the first three months of 1947 declined to 900,778 tons but were 17.3 percent above the comparable period of last year. Paperboard imports in the first quarter of 1947, totaling 13,372 tons, registered an increase of 45.9 percent over the first quarter 1946 total; while paperboard at 1,379 tons rose 80.7 percent in the same period. Imports of pulpwood and wood pulp in the first three months of this year dropped 21.2 percent and 2.9 percent, respectively, below the corresponding months of 1946. . . . Paper exports in the first quarter of 1947, amounting to 50,625 tons, dropped 32.9 percent below the total in the same period of last year but were about 9,000 tons larger than in the preceding quarter. Paperboard exports, totaling 25,101 tons in the first quarter of this year, were 18.4 percent above a year ago and also slightly in excess of the previous quarter. Exports of paper products in the first quarter amounting to 29,048 tons were approximately 30 percent above a year ago. Wood pulp exports, amounting to 31,159 tons in the first quarter showed a gain of 18,000 tons over any quarter in 1946.

Sweden doubled her exports of newsprint and wrapping paper and increased exports of pulp and cardboard considerably during April compared with March. Exports of newsprint rose from 6,000 tons in March to 13,000 tons in April. Wrapping paper exports rose from 14,400 tons to 29,300 tons as a result of strict rationing of paper. . . . Production of paper and pulp made a comeback during April in the United States zone of Germany and rose to 30 percent of the 1936 average or approximately last summer's level. Paper and cardboard output was 16,000 metric tons, a 42 percent gain over the March low caused by the severe winter. Newsprint, however, continued at the March level of 2,200 tons because manufacturers had to operate with insufficient fuel and pulp. . . . Canadian pulp and paper mills, particularly newsprint mills, are experiencing difficulty maintaining their output this spring because of adverse weather. Some machines have been forced to shut down intermittently. The continuing interruption of power supplies and the movement of pulpwood will make capacity production impossible in the immediate future. Log driving operations are about three weeks later than usual since cold weather delayed the spring break up. Many mills have nearly reached the bottom of their pulpwood piles and are dependent on the spring log drive for a continued supply of raw material. If the wood does not arrive on schedule, some temporary curtailment of operations will be unavoidable.

Wood Pulp

The 18 percent increase in total pulp production in the first quarter over the same period of 1946, and particularly the 28 percent gain in sulphate pulp, is not expected to be maintained for the year as a whole. Consideration must be given to the relatively low level of pulp output early in 1946 when unfavorable weather conditions in the South held down pulpwood deliveries and consequently pulp output. Despite record breaking production, consumption of pulp in March exceeded domestic output, the difference being accounted for by imports and withdrawals from inventory.

Over-all inventories of market pulp at the end of March were 200,000 tons less than in the same period last year; well over half the drop was in the sulphate pulps, with sulphite grades accounting for 43 percent of the decline.

Waste Paper

Demand for the higher grades of waste paper continues steady with some exceptions in the Midwest and New Orleans areas. The usual upswing in collections characteristic of the spring season has contributed in large measure to the condition of oversupply and to price recessions which have been a conspicuous recent development in some of the lower grades.

There is a growing insistence by paper mills on better quality, in virtually all grades, and a conservative and more discriminating attitude on the part of mill buyers of the higher grades.

Rags

First quarter receipts of all grades of rags were 10 percent above the same period of 1946. Over-all consumption registered a 21 percent gain in comparison of the same period. Stocks of rags in all categories throughout the country registered an improvement of 3,000 tons on March 31st over the preceding month and were 23 percent higher than a year ago.

Mill buying of new cotton rags is reported as limited in volume with a noticeable resistance to any increases in price. Some inventory accumulation on the part of fine paper mills has been taking place recently.

Newsprint Group Moves

MONTREAL, P. Q.—The Newsprint Association of Canada this week occupied its new location at 2280 Sun Life Building, adjacent to the offices of the Canadian Pulp & Paper Association.

CATALOG

write for it

TODAY

Sectional Drawing and Description of Sutherland Refiner Construction

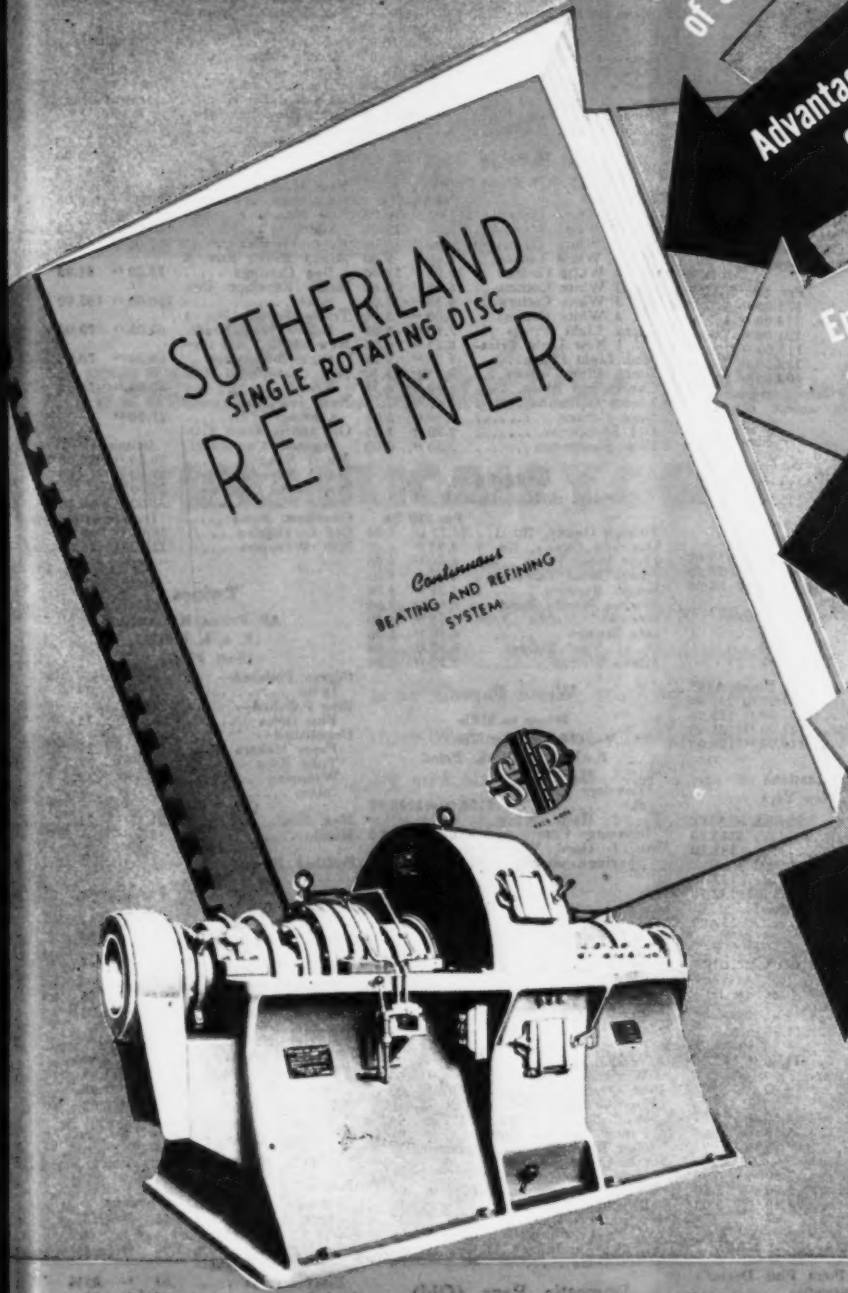
Advantages and Applications of Sutherland Continuous Beating and Refining

Engineering drawings of single and multiple refiner installations

Review of refining results in mills making various grades

Description of Principle and Method of Operation

Photos of all sizes of Sutherland Refiners, dimensions, weights.



SUTHERLAND REFINER CORPORATION

1102 BROAD STREET BANK BUILDING · TRENTON, NEW JERSEY

Manufactured in the United States by Valley Iron Works Co., Appleton, Wisconsin

SUTHERLAND REFINER LIMITED, 319 DRUMMOND BLDG., MONTREAL, P. Q. • *Manufactured in Canada by The John Bertram & Sons Co. Ltd., Dundas, Ontario*

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—
Roll, contract ....$84.00 to $90.00
Sheets .....103.00 " 109.00

Kraft—per cwt.—Carload Quantities

Zone A, Delivered
40 lb. base weight

Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	1.35	to	1.65
Wh. No. 1 M. G.	1.35	"	1.65
Wh. No. 1½	1.20	"	1.45
Wh. No. 2	1.30	"	1.55
Wh. Anti-Tar	2.75	"	4.25
Kraft Unbl.	1.45	"	1.85
Manila No. 2	1.25	"	1.45

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	4.47	to	5.50
Bleached	6.50	"	—

Paper Towels—Per Case of 3750—Zone 1.

Wh. C. fold 11x13⅛	4.39	to	4.80
Br. Sgl. fold 10 in.	2.67	"	3.00
Br. M'tif'd 9½x14¾	3.78	"	4.15
Br. M'tif'd 9½x9¾	2.67	"	3.00

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	to	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—

News	$92.50	"	—
Chip	90.00	"	—
Sgl. Mla. L1 Chip*	102.50	"	—
White Pat. Coated*	120.00	"	—
Kraft Liners 42 lb.*	84.00	"	95.00
Binders Boards	94.00	"	126.00

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items
Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.00	$48.00
100% Rag	46.50	43.00	41.25
75% Rag	35.00	32.50	31.50
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.

100% Rag Ext. No. 1	$54.25	$50.00	$48.00
100% Rag	46.25	42.50	40.75
75% Rag	36.00	33.25	31.75
50% Rag	31.00	28.00	27.00
25% Rag	27.25	24.75	23.75

Sulphite Bonds and Ledgers—
White, Assorted Items
Bonds, per cwt.

No. 1	$18.75	$16.25	$15.50
No. 2	17.00	15.25	14.50
No. 4	16.00	14.50	14.00

Ledgers, per cwt.

No. 1	$17.00	$17.00	$16.35
No. 2	17.75	16.25	15.50
No. 4	17.00	15.00	14.25

Free Sheet Book Papers—
White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$19.40	$18.60
No. 2 Glossy Coated	18.15	17.35
No. 3 Glossy Coated	17.65	17.00
No. 1 Antique (Water marked)	$14.90	$14.25
No. 2 Offset	15.35	14.70
A Grade E. F.	13.90	13.30
A Grade S. & S. C.	14.40	13.70
B Grade E. F.	Nominal	
B Grade S. C.	Nominal	
C Grade E. F.	Nominal	
C Grade S. C.	Nominal	
D Grade E. F.	Nominal	
D Grade S. & S. C.	Nominal	

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to $80.00
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	121.00 " 125.00
Bleached Soda	115.00 " 120.00
Unbleached Kraft	112.50 " 120.00
Southern Kraft	90.00 " 102.50

Canadian mill Prices delivered with freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	115.00 " —
Unbleached Sulphite	115.00 " 117.00
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	105.00 " 115.00
Groundwood	75.00 " 80.00
Sideruns Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Kraft	$150.00 to 156.00
Bleached Sulphite	151.00 " 158.50
Unbleached Sulphite	121.00 " 131.00
Unbleached Kraft	116.00 " 126.00

Finnish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50	to	$12.00
Light Silesias	7.50		
Unbleached Muslin	11.50	"	12.00
White Back Blue Overalls	8.25		
Blue Overalls	7.75		
Unbl. Fancy Shirt	4.50	"	5.00
Light Percales	5.50	"	6.00
Light Prints	5.25	"	5.95
Washables	4.00		
Bleachable Khaki	5.50	"	6.00
Unbleachable Khaki	5.00	"	5.50
Cottonades	4.50	"	5.00

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.00
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	2.20
No. 2 Roofing Rags	2.10
No. 3 Jute Bagging	2.00
No. 4 Brussels and hard back carpets	2.00
No. 5A Roofing Rags	2.00

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings	$6.00 to —
New Mixed Cuttings	6.50 " —
Light Silesias	9.00 " 10.00
Light Flannelettes	8.00 " 9.00
New White Cuttings	13.00 " 15.00
Fancy Shirt Cuttings	9.00 " 10.00
Light Prints	8.00 " 10.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	10.00 " 12.00
No. 2 White Cottons	8.00 " 9.00
No. 3 White Cottons	6.50 " 7.00
No. 4 White Cottons	5.00 " 5.50
Extra Light Prints	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints	5.25 " 5.75
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	3.00 " 3.75
Dark Cottons	2.50 " 3.00
Old Shopperies	2.50 " 3.00
New Shopperies	2.50 " 3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares	4.50 " 4.75
Heavy Wool Tares	4.75 " 5.00
Bright Bagging	4.25 " 4.50
Foreign Manila Rope	6.00 " 7.00
Domestic Manila Rope	5.75 " 6.50
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings	5.50 " 6.00
Mixed Strings	1.75 " 2.50

Waste Paper

Prices to Mills
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$120.00
No. 1 Hard White Envelope Cuts	90.00	"	100.00
No. 1 Hard White Shavings, unruled	100.00	"	110.00
No. 1 Hard White Shavings, ruled	80.00	"	90.00
Soft White Shavings, one cut	95.00	"	105.00
No. 1 Soft White Shavings	85.00	"	95.00
Soft White Shavings, Misc.	65.00	"	75.00
No. 1 Fly Leaf Shavings	55.00	"	60.00
No. 2 Fly Leaf Shavings	50.00	"	55.00
No. 1 Groundwood Fly Leaf Shavings	30.00	"	33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)		
Mixed Colored Shavings	(nominal)		
Mixed Groundwood Colored Shavings	(nominal)		
Overissue Magazines	(nominal)		
No. 1 Heavy Books & Magazines	30.00	"	37.50
Mixed Books	15.00	"	20.00
No. 1 White Ledger	60.00	"	65.00
New Manila Envelope Cuttings, one cut	100.00	"	110.00
New Manila Envelope Cuttings	65.00	"	75.00
Extra Manilas	35.00	"	40.00
Mixed Kraft, Env. & Bag Cuttings	75.00	"	85.00
Kraft Envelope Cuttings	100.00	"	105.00
Triple Sorted, No. 1 Brown Soft Kraft	60.00	"	70.00
New 100% Kraft Corrugated Cuttings	60.00	"	70.00
No. 1 Assorted Old Kraft	40.00	"	50.00
New Jute Corrugated Cuttings	27.00	"	—
Old 100% Kraft Corrugated Containers.	(nominal)		
No. 1 News	19.00	"	20.00
No. 1 Mixed Paper	17.00	"	19.00
Box Board Cuttings	20.00	"	—
White Blank News	75.00	"	80.00
Overissue News	(nominal)		
Old Corrugated	28.00	"	30.00
Mill Wrappers	22.00	"	25.00

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—India	.26	@	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—Paper Makers	.26	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—			
New White No. 1	.10½	@	.11
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05½
Blue Overall	.07½	"	.08
Cottons—According to grades—			
Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings—			
Unbleachable Cotton Cuttings	.05½	"	.06
Bleachable Cotton Cuttings	.06½	"	.07
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06

Domestic Rags (Old)

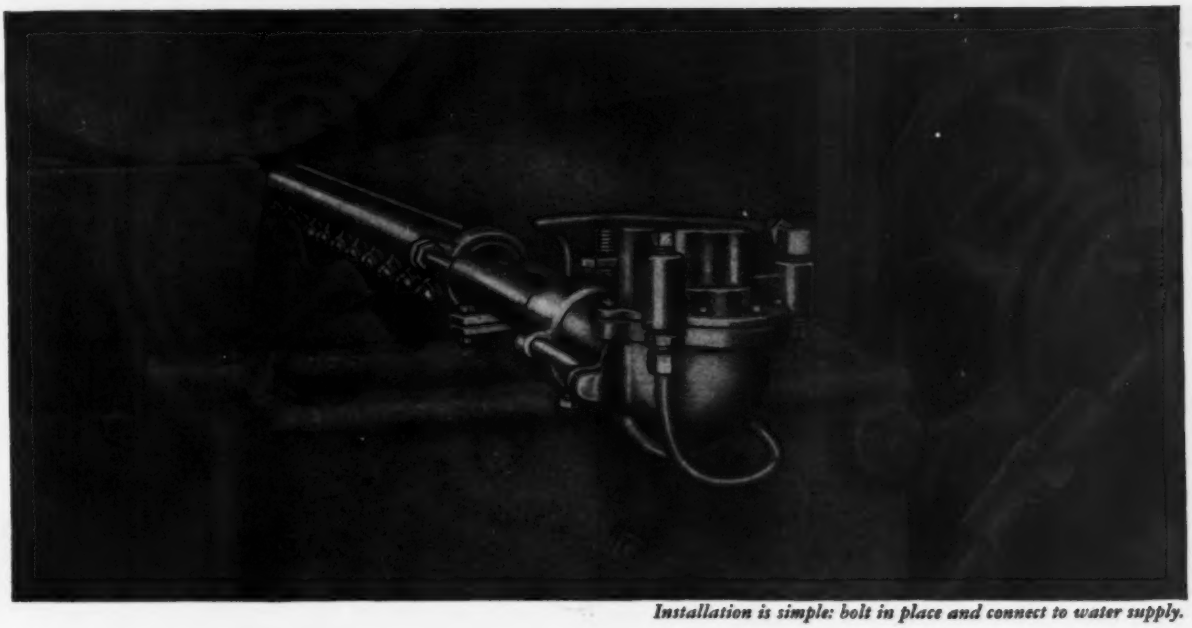
(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50	@	5.00
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues—			
Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock—			
Foreign No. 1	nominal		
Domestic No. 1	2.00	"	2.05
Domestic No. 2	1.90	"	1.95
Roofing Bagging	1.90	"	1.95
Old Manila Rope	5.75	"	6.00

Bagging

(F.O.B. Eastern Shipping Point)

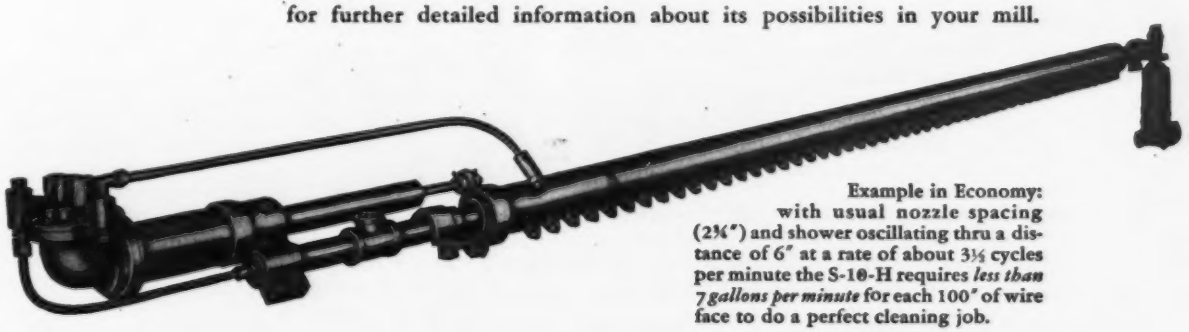
Gunny No. 1—			
Foreign	nominal		
Domestic	4.25	@	4.50
No. 1 Clean Bright—Sisal Strings	.04	"	.04½
No. 2 Clean Bright—Sisal Strings	.03	"	.03¼
Sisal Jute	.03¼	"	.03
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.85



Installation is simple: bolt in place and connect to water supply.

THE *Broughton* S-10-H HYDRAULICALLY OSCILLATED SHOWER

This completely hydraulic shower is quickly adaptable to cylinder moulds, thickeners, save-alls, wires or felts. Designed for efficient and dependable operation, it does a perfect job of cleaning while at the same time reducing stock adulteration and saving tremendous quantities of water. In many leading mill installations throughout this country and abroad, water expenditures for cleaning have plummeted to offset the shower cost in an incredibly short time. We invite your inquiry for further detailed information about its possibilities in your mill.



Example in Economy: with usual nozzle spacing (2¼") and shower oscillating thru a distance of 6" at a rate of about 3½ cycles per minute the S-10-H requires *less than 7 gallons per minute* for each 100" of wire face to do a perfect cleaning job.

A. E. BROUGHTON & COMPANY

Glens Falls, New York

Makers of Unit Vacuum Control Systems, also S-13-H Showers for Head Box Screens, and Air or Water Operated Oscillators for any purpose.

Wool Tares, heavy	4.00	"	4.25
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	60.00	"	65.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	75.00	"	80.00
Ledger, colored	60.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	45.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	20.00	"	—
Box Board Cuttings	20.00	"	—
Kraft Corrugated Cuttings	nominal		
Old Corrugated	30.00	"	35.00
Overissue News	40.00	"	—
No. 1 News	—	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	@	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.07	@	.07½
Fancy Percales	.07½	"	.08
New White No. 1	.10	"	.11
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.07	"	.08
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Soft Unbleached	.11	"	.12
Blue Cheviots	.07½	"	.08
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06	"	.07
O. D. Khaki	.07	"	—
Corduroy	.03½	"	—
New Canvas	.06¾	"	.06¾
B. V. D. Cuttings	.10	"	.11

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	25.00	"	—
No. 1 Mixed Paper	20.00	"	—
Old Corrugated	36.00	"	—
Mill Wrappers	22.00	"	—

MARKETS

BLANC FIXE—Supplies adequate to meet steady demand, deliveries improving. Pulp is currently quoted at $55 per ton, in barrels, car lots, at works; and $60 less car lots same basis.

BLEACHING POWDER — Demand steady with supplies fair to good. Shipments sometimes delayed. Quotations are unchanged. Prices on bleaching powder range from $2.75 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein are reported around 24 to 26 cents per pound for domestic grades and 28 to 32 cents for imported grades f.o.b. shipping point.

CAUSTIC SODA—Market continues tight, relief expected as new production arrives. Solid causic soda is reported at $2.50 per 100 pounds; flaked and ground offered at $2.90 to $3 per 100 pounds, car lots, at works.

CHINA CLAY—Demand continues heavy, supply tight. Domestic filler clay is currently $8.50 to $9 per ton, car lots. Coating clay is $12 car lot and $16 less car lot. Imported clay is currently quoted at from $17 to $35 per ton, in car lots, export warehouse.

CHLORINE—Demand continues strong in a tight market. Lack of tank cars continues to hamper deliveries. Quotations unchanged. Chlorine is currently quoted at $2 to $3.50 per 100 pounds.

ROSIN—Gum rosin in drums, per 100 pounds, net, in yard New York, car lots, B, D, $10.80; E, F, G, H, I, K, M, $11.80; WG, $12.05; WW, $12.05; Wood Rosin, per 100 pounds, l.c.l. f.o.b. N. Y., B, $7.45; FF, $8.95; G, H, I, $10.25; WW, and X, $10.45.

SALT CAKE — Supplies show little improvement as demand continues to increase. Prices remain unchanged. Domestic salt cake is quoted at $20 to $26 per ton in bulk. Chrome salt cake is quoted at $20 to $26 per ton.

SODA ASH—Demand active as supplies continue short, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.08; in paper bags, $1.20; and in barrels, $1.60.

STARCH—Domestic demand absorbs capacity production leaving little for export. Starch prices continue strong with the pearl grade quoted at $4.52 per 100 pounds; powdered starch at $4.63 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA — Active demand covered by fair supplies. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $1.95 to $2.25 per 100 pounds, in bags at works.

SULPHUR—Plentiful supplies to meet active domestic and export demands. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $17.50 per long ton.

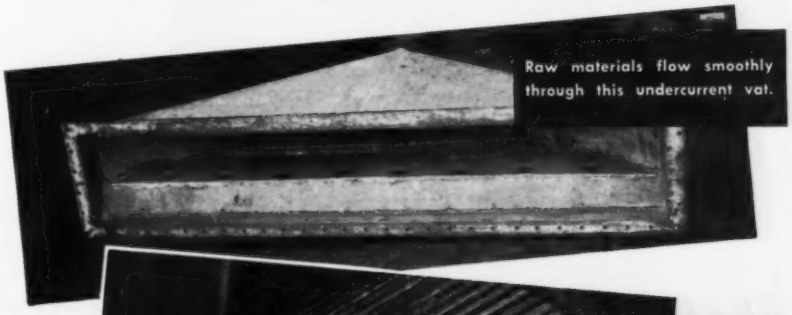
TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

WHEN YOU PUT IN STAINLESS EQUIPMENT

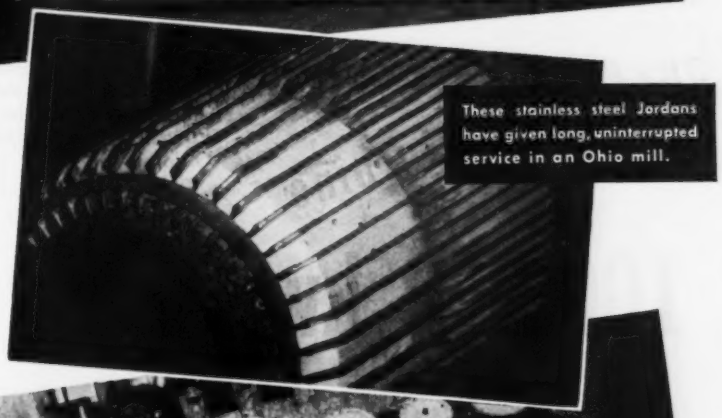
COSTS HIT BOTTOM—PROFITS STEP UP

New equipment made of ARMCO Stainless Steels is giving many mills a consistently higher yield of cleaner, more salable paper at lower over-all cost.

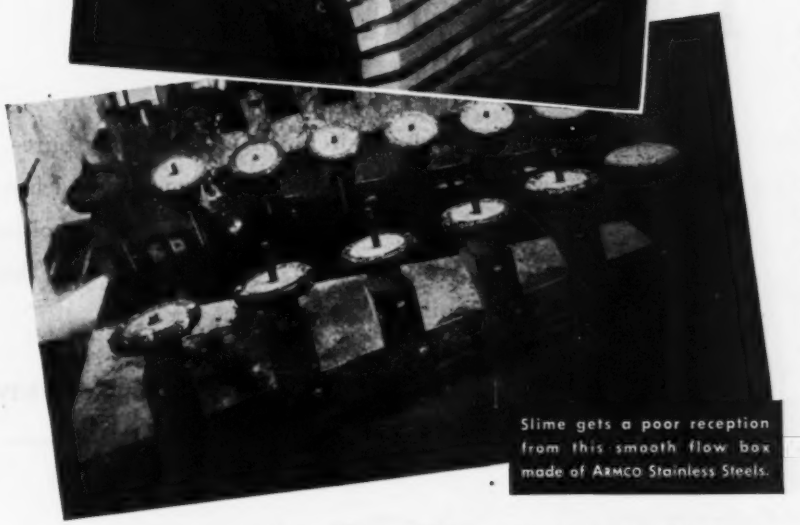
Whether you need new equipment or you buy sheets, strip, bars or wire these are the reasons why stainless steels are sure to give you better operating performance:



Raw materials flow smoothly through this undercurrent vat.



These stainless steel Jordans have given long, uninterrupted service in an Ohio mill.



Slime gets a poor reception from this smooth flow box made of ARMCO Stainless Steels.

1. MORE DURABLE
ARMCO Stainless satisfactorily resists chemicals used in bleaching. You'll experience no trouble from rust spots or other chemical reactions.

2. CLEANER PAPER
Stainless assures a uniformly high yield of cleaner paper. There is no danger of pulp contamination from rust, cement, wood or other substances.

3. LESS SLIME
Slime-producing bacteria has a tough time clinging to the smooth easy-to-clean surface of ARMCO Stainless.

4. LESS BREAKAGE
Reducing slime means fewer "weak spots." Paper breakage and rewinds are less frequent with stainless.

5. FEWER CLEAN-UPS
Less production time is lost in clean-ups. Only a hose and water under pressure are needed.

6. GREATER OUTPUT
Because stainless equipment can be cleaned in a jiffy with few shutdowns, you get greater output with fewer units.

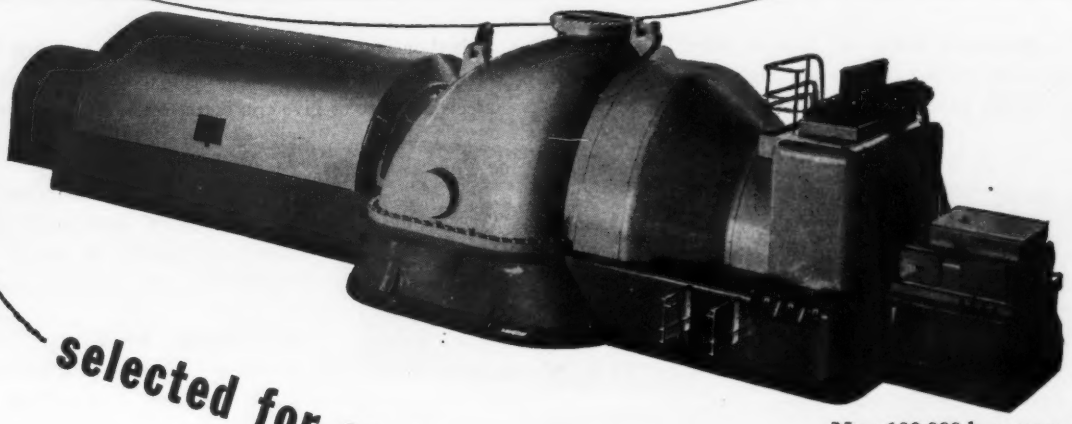
Hike production and profits in *your* mill the "ARMCO Stainless way." Your equipment fabricator will gladly give you additional facts. Or, write to us. The American Rolling Mill Company, 264 Curtis Street, Middletown, Ohio.

STAINLESS ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

SPECIAL-PURPOSE SHEET STEELS • STAINLESS STEEL SHEETS, STRIP, PLATES, BARS AND WIRE

GULFCREST OIL



New 100,000 kw. steam turbine recently installed at the Tidd Plant of the Ohio Power Company, Brilliant, Ohio.

selected for another big turbine

100,000 kw.

ANOTHER BIG TURBINE gets the safe, sure, long lasting protection of Gulfcrest, the world's finest turbine oil!

Another case, too, where outstanding performance in other turbines operated by the same utility led to the selection of Gulfcrest Oil for the new unit!

Extra refining makes the difference! After the carefully selected crude oil used in Gulfcrest goes through the major refining methods, it is then superrefined by the Alchlor Process.

More than 15 per cent of the oil is discarded by the Alchlor Process—this 15 per cent contains the hydrocarbons most apt to oxidize and form sludge, emulsifiers, and harmful acids.

That's why Gulfcrest is incomparably pure—why it gives outstanding performance, and lasts indefinitely. Send the coupon below for a booklet which gives you the complete facts on this superior oil.

Gulf Oil Corporation · Gulf Refining Company

Division Sales Offices:

Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

GULF INDUSTRIAL LUBRICATION

Gulf Oil Corporation · Gulf Refining Company PTJ
3800 Gulf Building, Pittsburgh 30, Pa.

Please send me, without obligation, a copy of your booklet "Gulfcrest Oil for Steam Turbine Lubrication."

Name.....

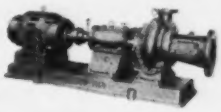
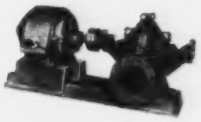
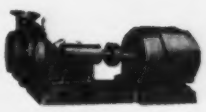
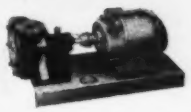
Company.....

Title.....

Address.....

Let's Take Up YOUR Pumping Problems

Worthington Solves Them with the Specific Pump for Every Paper Processing Job

Questions	Answers	
What's the best stock pump for sulphate, sulphite, soda, ground wood, waste paper, cotton linters, etc.?		An FP pump will handle them at capacities up to 6,000 gpm, heads to 200 ft. and consistencies to 7%.
How about a good white water or fan pump?		Use L and LA pumps for all heads and capacities with consistencies up to 1%.
What's a reliable pump for green or white liquor?		A CG Worthite is the ideal pump for dissolving-tanks, transfer and causticizing.
Handling black liquor is always a big problem at our mill. What pumps are best for its various phases?		For furnace feed of black liquor with suspended coke there's nothing like a CH pump.
		For circulation and transfer of concentrated black liquor at viscosities up to 10,000 ssu, use a CL.
		Black liquor pumping for multiple effect evaporators is best handled with a CG Worthite pump.

The Worthington Centrifugal Pumps shown here are your best answers for the general run of paper processing needs. Acids, bleaches, alum, sizes and other abrasive, corrosive, viscous or volatile liquids are handled efficiently and economically by these and other pumps in the world's most complete line.

Is Your Problem Different?

But perhaps you've met with some entirely new difficulty — either in processing or such general mill service as boiler feed, condensate or fire protection.

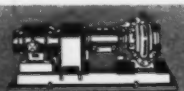
Whatever it may be, take advantage of the longest, most comprehensive experience in the field. Call our nearest district office or write to us direct. You'll get the prompt, expert cooperation on any pumping problem — no matter how unusual or complicated — that proves *there's more worth in Worthington.*

Worthington Pump and Machinery Corporation, Centrifugal Pump Division, Harrison, N. J.

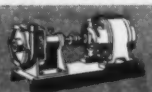
WORTHINGTON

C7-3

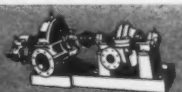
THE WORLD'S LARGEST MANUFACTURER OF PUMPS



CENTRIFUGAL STOCK PUMPS Type FP. Handle all kinds of stock up to 7% consistency. 4 sizes. Capacities up to 6000 GPM; heads up to 200 ft.; speeds up to 1750 RPM.



GENERAL PURPOSE PUMPS Type CF. Open impeller. Single stage. Sizes 1" to 4". Capacities up to 1000 GPM, heads up to 130 ft.; speeds up to 2475 RPM.



BOILER FEED PUMPS Type UB-2. 7 sizes. Capacities up to 1500 GPM; heads up to 1000 ft.; speeds up to 3600 RPM.

OBITUARY

Albert Bankus

SAN FRANCISCO — Albert Bankus, vice-president of the Crown Zellerbach Company, died on Sunday, June 1st. Mr. Bankus was born in Forrest City, Iowa, on September 5, 1885, and attended school in Portland, Ore. He joined the Crown Columbia Paper Company in 1906. This company later became the Crown Willamette Paper Company and finally the Crown Zellerbach Corporation. Since 1926 Mr. Bankus has been located at Portland and San Francisco.

Mr. Bankus had general supervision of production, manufacturing and construction in the various divisions of the corporation. From 1917 to 1920 he was manager of the Camas, Wash., mill and from 1922 to 1925 he was mill manager of the West Linn mill. Since then he has been an executive officer of the Corporation. From 1935 to 1942 he was a member of the executive committee of the Technical Association of the Pulp and Paper Industry.

Charles Rossum

RIDGEFIELD, N. J.—Charles Rossum, one of the founders and secretary-treasurer of the Continental Folding Paper Box Company, Inc., died suddenly at his home, 320 Central Park West, Manhattan, N.Y.C. on Friday, May 23rd, following a heart attack. Funeral services were held in New York City on Monday, the 26th of May.

Mr. Rossum was born in New Haven, Conn. April 15, 1888, son of the late Thomas and Rebecca Rossum. He attended grade schools in New York City and later became associated with International Folding Paper Box Co. and International Butter Dish Company. Later, with his brothers, Abraham, Michael and Alfred, he formed the present company back in 1916. The company manufactures all grades of folding paper cartons. Mr. Rossum was associated in the folding paper box line for 46 years and was active in the management of the company until he died. He is survived by four sons, Robert T., Paul, Alfred and Howard, and a brother Abraham, who is now President of the Company.

David M. Gates

ROARING SPRING, Pa. — David M. Gates, retired assistant superintendent of the D. M. Bare paper mill, died Saturday morning in the Nason hospital, Roaring Spring, after several months' illness.

He was born near Roaring Spring on Oct. 12, 1863, a son of William and Sarah (McKee) Gates, and resided in Roaring Spring for many years, retiring from the paper mill several years ago after 60 years of service.

Mr. Gates was a member and life elder of the Bare Memorial Church of God in Roaring Spring, serving on the church council for many years, and a member of the I.O.O.F, Model lodge 856.

Interment was made in Greenlawn cemetery, Roaring Spring.

John H. Malin

FORT EDWARD, N. Y. — John H. Malin, 73 years old, former treasurer and president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, died recently at his home in this village. He was the first organizer for the union which had its beginning here in 1901. The union was organized into an International Brotherhood at a convention held at Burlington, Vt., in 1906, at which he was elected treasurer. In 1909 he was elected president of the organization and retained that post until 1917. For the past several years he had served as a field representative of the organization which claims about 110,000 members. He retired last January.

Name your Machine and Jordan Chest Requirements
EAGLE-A
PAPERS
Warren Machine and Jordan Chest Pumps in operation at Riverside and Linden Divisions of American Writing Paper Corporation, Holyoke, Mass., manufacturers of famous Eagle-A Nationally Advertised Papers.

Warren Meets Every One!

SMOOTH FLOW: Unlike a plunger pump, the Warren Centrifugal gives smooth flow without pulsation.

REGULATION: Easily throttled, and unlike a plunger pump, the discharge valve may be closed without building up excessive pressure on pump and discharge line.

COMPACTNESS: Takes up less floor space and very much less head room than a plunger pump of equal capacity.

CLEAN STOCK: There are no pockets, as in a plunger pump, to hold stock from previous furnish.

ACCESSIBILITY: Diagonally split case makes it unnecessary to remove discharge piping. Rotating member easily lifted out.

MAINTENANCE: Low maintenance charges as compared with a plunger pump. Renewable liners prevent wear on suction heads. No large plunger stuffing boxes to be packed or to create friction on plungers. No plungers to be turned or replaced.

INITIAL COST: Lower than a plunger pump of much less capacity.

QUIET OPERATION: No gears making a continuous noise and creating vibration.

APPLICATION: Warren not only has the pump for this most vital service but the experience and ability to engineer its proper application.

Why not try a performance tested

Warren

MACHINE CHEST PUMP PP-5½

Warren Steam Pump Company, Inc., Warren, Massachusetts

This headbox stands on its own feet

MONEL HEADBOXES are now standard equipment for Fourdrinier wet ends at plant of The Crane Company, Dalton, Mass. *Fabrication and installation by The Berkshire Sheet Metal Works, Pittsfield, Mass.*

Entirely self-supporting, it's another example of Monel's many wet end uses

Headbox problems are few in The Crane Company's mill at Dalton, Mass.

For Crane has standardized on Monel.*

And Monel headboxes are installed in one piece. They're *self-supporting.* They stay tight and don't leak.

They have no wood joints to swell and spring out of place. They need no protective paint. No preservative of *any* kind.

Smooth . . . and easily cleaned

Monel is both stronger and tougher than mild steel. It resists corrosion by paper stocks and white waters. Its surfaces stay smooth, and never give slime and fibre accumulations a chance to dig in and hang on. That's why it's so easy to keep Monel headboxes slick and clean merely by rinsing them with a fresh water hose.

Readily fabricated

Monel presents no problems to experienced fabricators. They can do almost anything with it. For example, The Berkshire Sheet Metal Works, Pittsfield, Mass., cut, bent and welded this headbox by commonly used methods.

For other jobs too

Because Monel shows no galvanic reaction with copper or brass parts, it has many uses throughout the wet end. Specify it for save-all pans and trays, suction boxes, rods, rolls, rails, fastenings, doctors and slices, as well as for headboxes. Let Monel help make *all* your equipment long-lasting and trouble-free.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET, NEW YORK 5, N. Y.

MONEL

NICKEL (INCO) **ALLOYS**

MONEL* • "K" MONEL* • "R" MONEL* • "KR" MONEL* • "S" MONEL*
INCONEL* • NICKEL • "L" NICKEL* • "Z" NICKEL* *Reg. U. S. Pat. Off.

DIGESTED

In every company there are certain sacred cows—top drawer secrets. These arrange themselves first into certain things which the company knows and nobody else knows—these are certainly assets. Then there are other things which the company knows which they think nobody else knows—but as a matter of fact everybody knows them. And last of all, there are things the company knows and nobody else knows — but it doesn't really matter because they are all wrong anyway. If a company has to hold its position behind a Maginot Line of secrecy, it could be argued that the company has an inferior research organization, for it is not capable of keeping ahead of competition.

Do our research people have enough time to play with ideas? A man is assigned to work on a certain problem, and is certainly not encouraged to work or think outside this framework. While this is the most efficient way to solve problems, it leaves a research worker very little time for truly creative thinking and dabbling in fields that intrigue him. He buries his ideas, stores them away until some day when he will have leisure which, alas, seldom comes. It is my belief that a lot of good ideas have died in confinement. — DR. CHARLES ALLEN THOMAS, *From a talk before the Industrial Research Institute.*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
April 26	105.3	April 27	100.6
May 3	107.5	May 4	107.3
May 10	107.9	May 11	102.8
May 17	105.3	May 18	98.3
May 24	105.1	May 25	99.2
May 31	*104.7*	June 1	96.3

COMPARATIVE MONTHLY SUMMARIES

1946						1947	
Jan.	94.7	May	100.7	Oct.	106.4		
Feb.	98.4	June	104.6	Nov.	105.5	Jan.	102.1
March	104.4	July	94.0	Dec.	97.0	Feb.	105.9
April	102.7	Aug.	104.7			March	106.1
		Sept.	101.3	Year Avg.	101.1	April	105.1
						May	*105.9*

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	86.4	92.6	100.8	88.9	88.3	88.6	99.9	*105.3*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

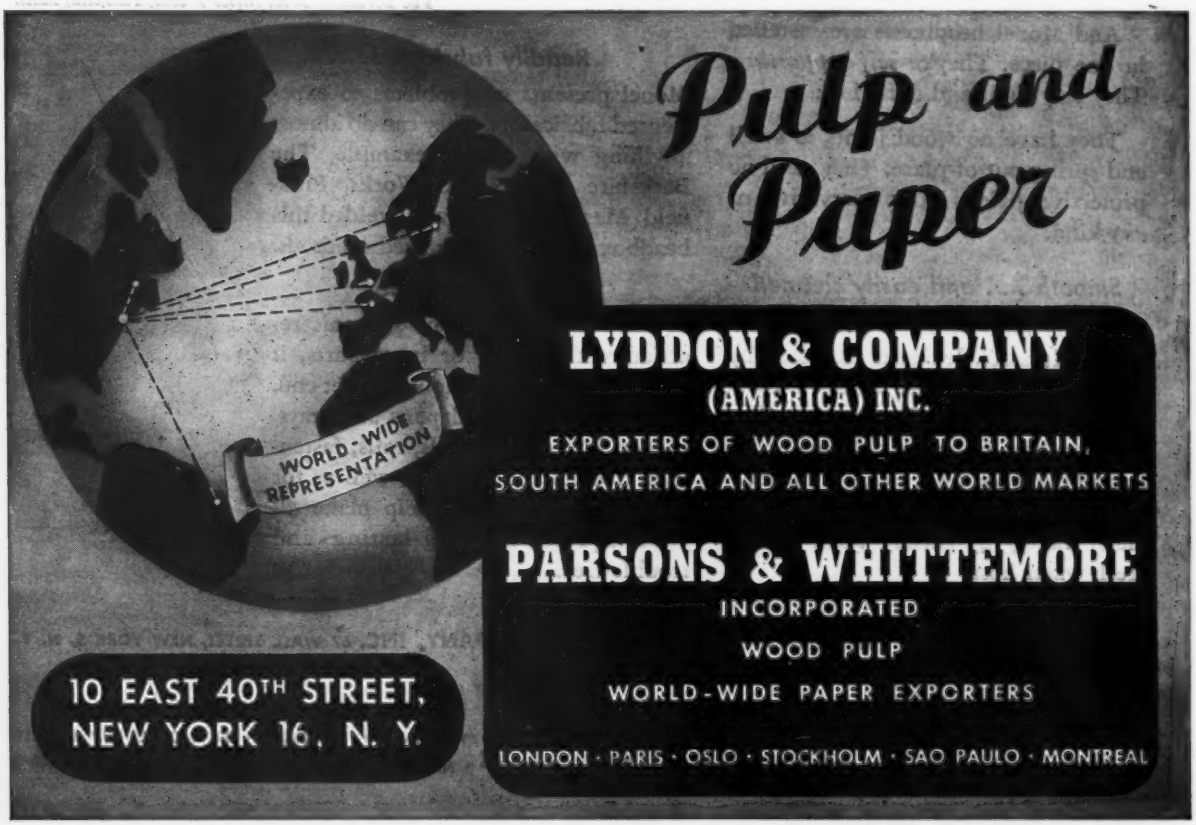
PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
April 26	100	April 27	95
May 3	102	May 4	101
May 10	101	May 11	97
May 17	102	May 18	92
May 24	101	May 25	93
May 31	*98*	June 1	85

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	*101*								

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.


Pulp and Paper
WORLD-WIDE REPRESENTATION
LYDDON & COMPANY
(AMERICA) INC.
EXPORTERS OF WOOD PULP TO BRITAIN, SOUTH AMERICA AND ALL OTHER WORLD MARKETS
PARSONS & WHITTEMORE
INCORPORATED
WOOD PULP
WORLD-WIDE PAPER EXPORTERS
10 EAST 40TH STREET, NEW YORK 16, N. Y.
LONDON · PARIS · OSLO · STOCKHOLM · SAO PAULO · MONTREAL

EDITORIAL

Four C's in Operation

A wise old publisher once kept solid ground under the feet of a too hopeful advertising man with the remark that those contracts for advertising were of no value until the space had been filled and the bills paid. Put so pointedly the force of the argument had a wholly salutary effect. The memory of that incident accents to one commentator the importance the value of an appraisal of credit conditions as a market index, as well as a listing of unfilled orders.

How greatly the routine work of a well-ordered credit department can help management in its estimates of future business was ably set out at length recently when Emmet W. Below, credit manager of the Marathon Corporation spoke before the National convention of credit men in New York. Four "C's" he reminded his audience are always to be considered — Capital, Character, Capacity and Conditions.

Then he turned to case histories as an example of how credit routine can be helpful in establishing future volume of sales. During the expansion period of the war, a large plant was built for processing foods. When the government and other sources were taking all the merchandise at practically any price, this plant was able to operate fairly profitably. However, they were handicapped considerably by a severe water shortage. In checking through past records, it was apparent that this condition would have to be eliminated before they could operate in a competitive market. Orders for this account showed up and, based on their past record of discounting payments and prompt handling of all obligations, immediate credit approval was given. However, before shipment was made, it was possible to call at this plant and it was found that they had not corrected their water problem. They proceeded to do this and, because of the tremendous cost involved, it forced them into receivership. Recognizing that this situation was apparent and that they couldn't operate until the water supply was in, the order for merchandise for shipment to them was held up and thus this receivership was avoided. In the normal course of our operations that merchandise would have been shipped before the receivership except for the fact this unusual problem came to our attention through field work.

In the manufacturing of certain types of packaging materials for fruits and vegetables, a highly seasonal problem is involved. The weatherman in this particular case can play an important part in the final outcome. A good illustration of this is the fact that this spring in one area, almost the entire crop of peas was lost due to late snows and wet cold spring. It was decided to curtail production and shipment of packaging materials for this particular time. Inasmuch as a considerable amount of tonnage and dollar sales were involved, it relieved the mill of an inventory and collection problem and, likewise, strengthened the customer's position inasmuch as they were then not obligated to carry an inventory over into the following season.

Many aware of what has been happening in the dairy field, particularly in the cheese market. The price situation has been very irregular. The exceedingly high prices of last summer and fall finally priced this business out of the market to a considerable extent. It is currently just going through a low point and is now reviving

Large companies doing a national business, Mr. Below predicts, may find it difficult for their top credit executives to be completely aware from a field standpoint of all the different situations which would seriously impair their customers credit. However, an educational program carried out for your salesmen can equip them to be alert to varying factors which are not reflected in a balance sheet. Because a credit man should have a wide background of knowledge concerning his customer's business, it can be said that he is doing himself and his customers a dis-service by not accepting some of the responsibility of this work. Through opportunities to observe a variety of different types of customers and operations, he should be in a position to counsel with those that need help and assistance and offer them advice predicated on sound information.

Local Boy Made Good

Along with all the congratulations that go to a man who lays aside active business routine after a long and successful career, an extra measure of personal good wishes must be accorded Chester Burnham who says that he has retired from representation of the Kalamazoo Vegetable Parchment Company. Former editor and publisher that he was, and former representative of these columns in New England, he went on to bigger things and a commanding position of respect among paper men in New England. He has often told, and in the news story which he wrote about retiring he repeated, how he was prompted through his reportorial work to seek some extra contacts among paper mills which might require such services as he offered. From this prompting grew a connection which he now lays aside after well more than a score of years. But is he retiring? He has promised to be back after a summer down on Cape Cod.

W. L. Cook

EDITOR

Draper's

ATLAS OF AMERICAN PAPERMAKING

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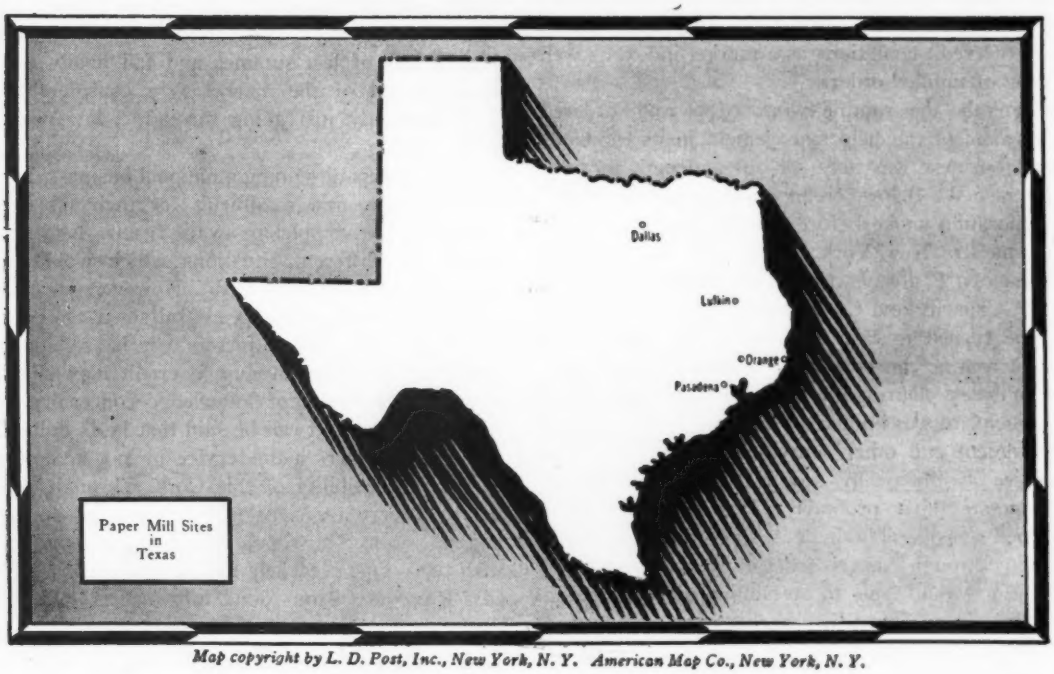

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HIGHLIGHTS: Texas pioneered in the use of yellow pine for making pulp when the Letcher Moore Lumber Company erected a soda pulp mill at Orange in 1904. It shifted to making sulphate pulp in 1911.

In Texas, also, the first newsprint mill using this species of pulpwood was started at Lufkin. The manufacture of kraft pulp began only two years after it was first produced in the United States.

There are but four paper mills at present in the State, which ranks 23rd in the amount of annual production. Each makes a different sort of paper. The machine equipment includes five Fourdriniers and one cylinder machine.

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SECTION OF THE

TECHNICAL ASSOCIATION
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122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Effect of Urea Resins on Starch Clay Coating Compositions*

By P. S. Hewett[1], R. E. Carter[1], and R. J. Church[1]

The use of starch as an adhesive is centuries old. The original adhesives, developed more or less by trial and error, have since been vastly improved and have found wide application in the paper field in the gluing of paper, the manufacture of boxboard, and the preparation of coatings and sizes.

One of the difficulties encountered in practically every instance where starch adhesives have been used is their lack of water resistance. The addition of synthetic resins to these compositions has greatly improved their resistance to water. A measure of success in this application has given impetus to the present work on resin-starch adhesives and their application in the paper coating field.

The agents added to starch-clay coatings to improve their water resistance, wax, and brightness, may conveniently be divided into two broad general classes for the purpose of this discussion. The first class may be called noncondensing or physical, and the second, condensing or starch reactive mixtures.

The first group contains such materials as ester-gum emulsions which have been used along with starch in clay coatings to produce improved water resistance *(1)*. Various latexes and dispersions of polymers such as styrene, acrylate, methacrylate, vinyl derivatives, synthetic rubber, etc., also fall in this classification. Materials of this type, though they may change in physical or chemical properties by further polymerization, nevertheless do not form a true chemical union with the starch or starch derivatives. The use of these materials, along with starches, as a binder for clay in paper coatings results in an improvement over the use of starches alone.

The second, or starch reactive group, contains agents which are capable of forming a chemical union with starch under the conditions employed in preparing the adhesive, or subsequently employed in processing and curing the coating. Some of the materials which fall in this latter class are aldehydes, urea-formaldehyde, melamine-formaldehyde, phenol-formaldehyde, and ketone aldehyde resins.

By careful adjustment of the conditions of concentration, time, temperature, pH, etc., it is possible to produce a starch-clay coated paper which has a remarkable degree of water resistance by employing formaldehyde as an insolubilizing agent. The control of this process is so critical that the procedure has not yet gained wide industrial application. The emphasis, instead, has been on resins prepared by reacting formaldehyde with materials such as phenol, melamine, and urea. Though phenol-formaldehydes can be employed in clay coatings, the inherent reddish brown color and higher conversion temperature of these resins limit their use.

The resins of this class which appear to be best suited to paper coating applications are the melamine and urea resins. Their light color, ease of conversion and potential reactivity makes them the more attractive possibilities in this group.

In this work emphasis has been placed on the use of urea formaldehyde resins, along with starch and clay, in preparing coating compositions. Using the basic raw materials, urea and formaldehyde, with various catalysts and modifying agents, a multitude of condensation products can be prepared having a wide variety of properties. The basic reaction is the same, irrespective of modification, and involves the combination of urea and formaldehyde under closely controlled conditions of concentration, time, temperature, and pH. In an aqueous solution at a pH above 7.0, this reaction goes as shown in Fig. 1.

These two compounds are crystalline in nature and are considered intermediates in the formation of urea resins. When the pH of the solution is changed by the addition of a suitable acidic catalyst, the crystalline intermediates condense to form a resin. This is accompanied by the removal of water from the molecule and may be illustrated as in Fig. 2.

This reaction, when carefully controlled, results in the formation of condensates of varying molecular sizes which are dissolved and/or dispersed in water to form resin solutions. It is normal procedure to arrest this reaction at a predetermined point by adjusting the pH of the reacting mixture to above 7.0, where the resin is stable for a period of months. In practice, the crystalline methylol compounds or this precondensed resin syrup may be used along with starch as a binder for clay coatings. It has been found that resin solutions are best suited to this application, as they appear to be more uniform in reactivity than the crystalline intermediates. The precondensates, as supplied to the paper coater, are normally above 7.0

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[1] Reichhold Chemicals, Inc., Detroit, Mich.

in pH to prevent further and uncontrolled advancement in the package.

These urea formaldehyde intermediates, or resins, may be added to the starch during the cook *(2, 3)*, at top heat as a chill back or to the cooled finished adhesive. Prior to the application, and at a point determined by the particular process used, the coating is adjusted to a pH lower than 7.0 and usually below 6.0, with a suitable acid or acid forming salt. Following this adjustment and at the elevated temperatures used in drying and curing the paper coating, the urea-resin appears to undergo two chemical reactions. The first is a further condensation of the urea-resin with itself to form higher molecular weight compounds, and the second is a chemical union between the free hydroxyl groups remaining on the resin condensate, and the hydroxyl groups on the starch, amylose or branched chain fraction. This latter reaction may be shown as in Fig. 3, where ROH represents the starch molecule.

This reaction between urea formaledhyde condensates and alcohols has been studied at length by earlier investigators *(4)*. This earlier work was done primarily on the lower monohydric alcohols. This investigation indicates that a formation of ethers between polyhydroxy compounds such as amylose, starch, and cellulose and the free unreacted methylol groups of the urea resin molecule also occurs.

Experimental Procedure

For this work a urea resin having a relatively low free formaledhyde content was selected. This has been found to be of great significance in the mill application of urea resin starch clay coatings, as the odor of formaldehyde is very objectionable around the coating equipment. While it is true that all urea resins are not identical, it is believed that the one chosen was representative of those in this particular class.

There are three types of starch normally employed as binders in clay coatings. These are acid hydrolyzed, enzyme converted, and chlorinated starches. There are a large number of commercially available starches on the market representing each of the three classes. For the purposes of this paper one starch from each of these three classes has arbitrarily been selected. In so doing, it is not wished to infer that all the starches available are alike, as a wide variety of starch compositions falls into each of these groups. To obtain complete results, it would be necessary to repeat this series of experiments for each individual starch available.

In order to obtain reproducible results, it has been necessary to select a certain set of conditions for preparing the starch adhesive and the coating. The

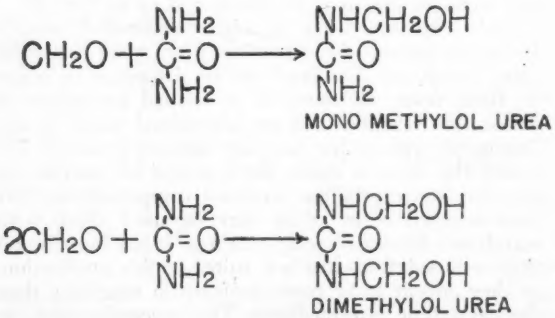

Fig. 1

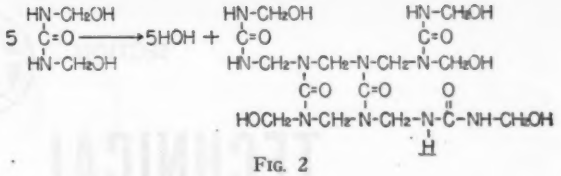

Fig. 2

following will give an outline of the experimental procedures used in gathering the data.

In preparing the enzyme converted starch, the starch was mixed with the requisite amount of water, and the solution was placed under constant mechanical agitation. In the laboratory a thermostatically controlled circulating glycerine bath was employed for making the starch cooks. The cook was heated to about 75 to 110°F. At this point the enzyme (0.625% based on the starch) was added. The temperature was then increased to 150 to 160°F. and maintained at that point until the starch had been converted to the required fluidity. Following this conversion step, the temperature was increased to 175 to 185°F., at which point the resin was added. The heating was continued until the temperature reached 200 to 212°F. This required about 20 minutes in the laboratory. It was necessary to use care during the last 10°F. rise in temperature to avoid foaming. The batch was then cooled to 75°F. and entirely or proportionately added to the premixed clay slurry, which was at 66⅔% nonvolatile. This clay slurry was prepared previous to the addition of the resin starch mixture. After thorough preliminary mixing, the color was pebble milled for 0.5 hour and then screened through a 325-mesh screen. The samples of color were then ready for the addition of the particular catalyst employed. The catalysts were dissolved in a minimum of water and added in the form of their concentrated solution. Allowance was made for the amount of water used with the catalyst in calculating the solids of the finished coating color, which was kept at 45%.

The paper was coated with these colors on a small doctor blade machine, and care was taken to apply it in such a manner as to produce a finished sheet having a 15 pound coat. These samples of paper were cured at 212°F. for 5 minutes, allowed to condition overnight, and then calendered before testing. Though the resulting calendered sheets were inferior to those prepared on a regulation paper calender, nevertheless, they were sufficiently comparable so that the various members of this series could be checked, one against another.

The acid and chlorinated starches employed in the work were treated in a manner very similar to that described in the foregoing paragraphs. Weighed samples of starch and water, which had been thoroughly mixed, were immersed in a heating bath. The cook was kept under continuous agitation and the temperature was allowed to rise from 75°F. to 185 to 195°F. in 45 minutes. The resin was added to this mixture, and the temperature was held between 185 and 195°F. for an additional 30 minutes. The cook was then cooled to the neighborhood of 75°F., prior to the preparation of the color. The procedure used in preparing this finished coating color and in applying it to the paper was the same as that employed with the enzyme converted starch.

After the sheets had been conditioned, they were tested to determine weight of coating wax, brightness, wet rub resistance, and gloss. A Hunter gloss meter and brightness tester were available in the

laboratory, and using this instrument, it was possible to obtain comparable figures on both the gloss and brightness. Due to the low sensitivity of this meter, and the difficulty experienced with the calendering operation, it is believed that the gloss and brightness readings are not completley representative, and hence this aspect of research has not been emphasized in this paper.

In the past four years, numerous ways of determining the wet rub resistance of clay coated papers have been tested. All the procedures tried to date have possessed certain disadvantages. After numerous variations of existing methods, one was decided upon which has been used to advantage by a portion of the coating industry for some time. The method in question does not require special equipment and gives results which are permanent and can be filed for future reference. It does have the disadvantage that human error enters to some extent into the results obtained. In carrying out this test, the coated paper was placed on black paper in such a manner that there were about 2 or 3 inches of black paper extending beyond the edge of the coated paper. A drop of

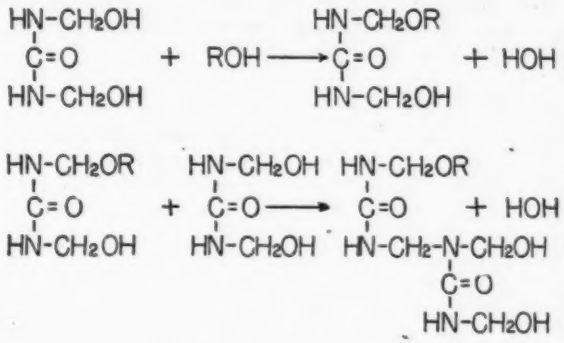

FIG. 3

water was placed on the coating and allowed to stand for exactly 15 seconds, during which time the coating softened. The two papers were then held firmly in place, while the operator drew his finger from the coated paper onto the black paper three times, employing, as nearly as possible, the same pressure on each rub. This left a white deposit of color on the black paper which varied in intensity, depending on the water resistance of the coating being tested. It was found that, with a little practice, these tests can be repeated by different individuals with comparable results. The black paper containing the moist deposit of clay can be either dried at room temperature or in an oven.

The viscosities reported in this paper are in centipoises and were obtained using a MacMichael Viscosimeter. This instrument was standardized against oils of known viscosity procured from the United States Bureau of Standards.

Experimental Data

The coating compositions listed in Table I were made up for each of the three types of starch—enzyme, acid and chlorinated. The pigment to binder ratio remained constant throughout these experiments at 3 to 1, while the percentage of solid urea resin based on solid starch varied from 0 to 25%, as indicated by the first line of Table I. The line marked "Wetting Agent" refers to the weight of sodium tetrapyrophosphate added to the clay to aid in its dispersion.

The coating compositions were catalyzed with the acidic catalyst just prior to application. Many catalysts such as alum, ammonium chloride, etc. have been tried. In this work the results reported were obtained using ammonium oxalate, diammonium phosphate, and a latent catalyst. The latent catalyst used is one which does not appreciably affect the pH of the coating composition until heat is applied. These particular catalysts were employed because it has been found that they give less increase in viscosity of the finished coating color than alum or ammonium chloride. This is important when this type of composition is to be used on machine coaters.

Figure 4 illustrates the effect of increasing amounts of urea resin on the viscosity of the finished coating color, prior to the addition of the catalyst for the three types of starch studied. It can readily be seen that increasing amounts of resin decrease the viscosity of the coating color, the pigment to binder ratio remaining constant. The results indicate that this decrease is more uniform for enzyme and acid converted starch than for chlorinated starch. The work to date has failed to provide an explanation for the behavior of the composition containing the chlorinated starch.

The effect of catalysts on the viscosity of starch-urea resin-clay coatings was then studied. This work was done on compositions containing 15% urea resin based on the starch. There is a direct relationship between the amount of catalyst employed and the viscosity of the coating color. Figure 5 is representative and shows the relationship between the amount of catalyst added—in this case diammonium phosphate—and the viscosity of the color prepared, using acid converted starch. This relationship closely parallels that which has been observed earlier between pH and viscosity in similar compositions. When catalysts such as ammonium salts are used, the pH

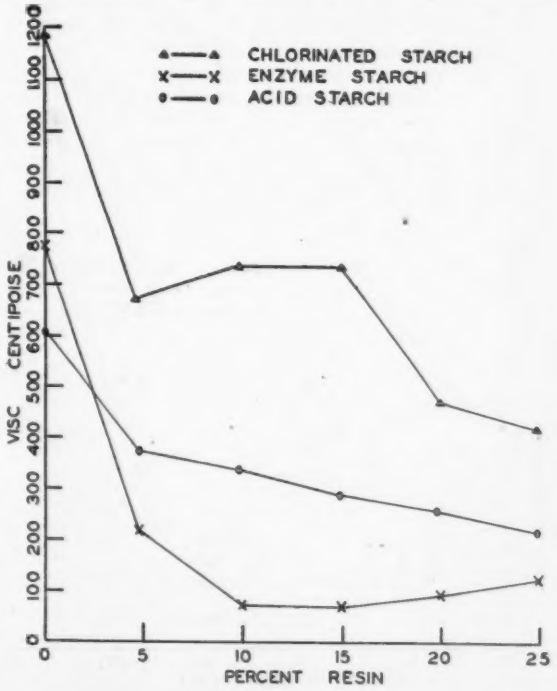

FIG. 4
Effect of Urea Resin on Uncatalyzed Coating Colors

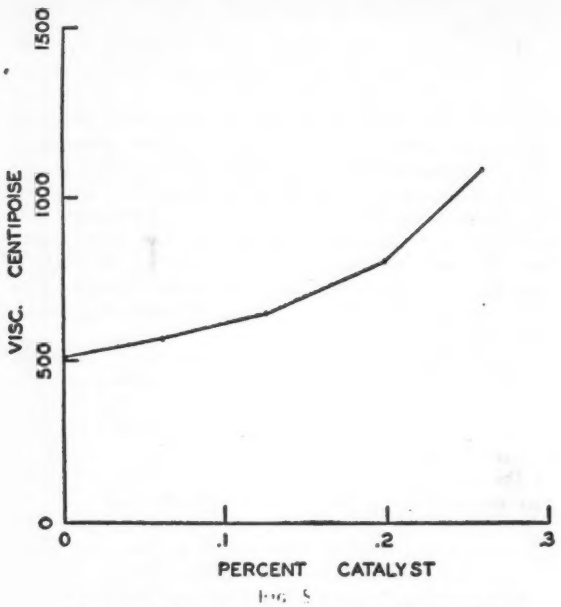

Fig. 5

Effect of Catalyst on the Viscosity of the Coating Color

of the initial coating mixture may not be indicative of the pH attained while the coating is curing. The mechanism appears to involve the reaction between formaldehyde and the ammonium salt with the formation of an amine and the liberation of the free acid. In compositions containing relatively small amounts of free formaldehyde this ultimate value may not be obtained for some time. Therefore, the percentage of catalyst has been plotted against the viscosity, rather than the pH against viscosity.

In Fig. 6 the effect of the three catalysts—ammonium oxalate, diammonium phosphate, and latent—on the viscosity of coating compositions prepared from enzyme-converted starch, and containing various percentages of urea resin, is shown. The percentage of resin shown on the abscissa is the per cent of solid resin, based on dry starch used as binder, which is plotted against the viscosity of the catalyzed coating color in centipoises. This illustrates the effect of these three catalysts on the viscosity of compositions containing various percentages of urea resin.

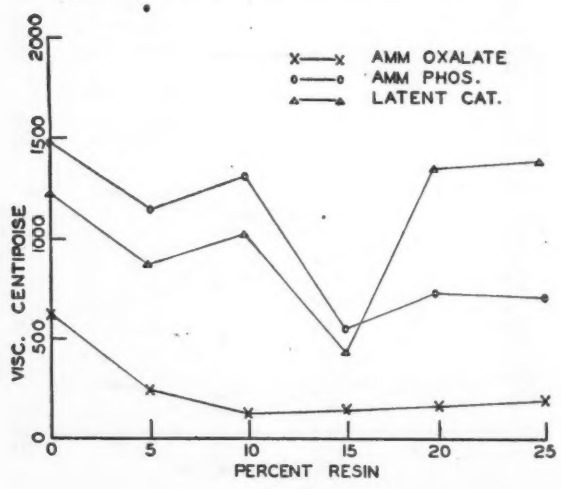

Fig. 6

Effect of Urea Resin on Enzyme Converted Starch Coatings

Figures 7 and 8 present similar data for acid converted and chlorinated starches respectively.

The effect of altering the pigment to binder ratio is shown in Fig. 9. The composition of the binder was kept constant at 15% solid urea resin, based on the dry starch, and the ratio of pigment to binder was the only variable. The lower curve gives the viscosity of the uncatalyzed coating color, and the upper curve the viscosity of color after the addition of 0.2% diammonium phosphate, based on total solution. These curves serve to emphasize the greater increase in viscosity of high pigment formulas when a catalyst is added. This tends to indicate that the viscosity trouble may be due to the action of the catalyst on the clay, rather than its action on the starch-urea resin binder.

Figure 10 is a photograph of the black paper on which wet rubs of enzyme starch-urea resin coatings were made. This ilustrates the effect of increasing the amount of urea resin, based on the starch, on the water resistance of coated papers prepared using the three different catalysts discussed in this paper. Figures 11 and 12 illustrate the water resistance for the corrseponding compositions containing acid converted and chlorinated starches. In each case, increasing the amount of urea resin has improved the wet rub of the resulting coating.

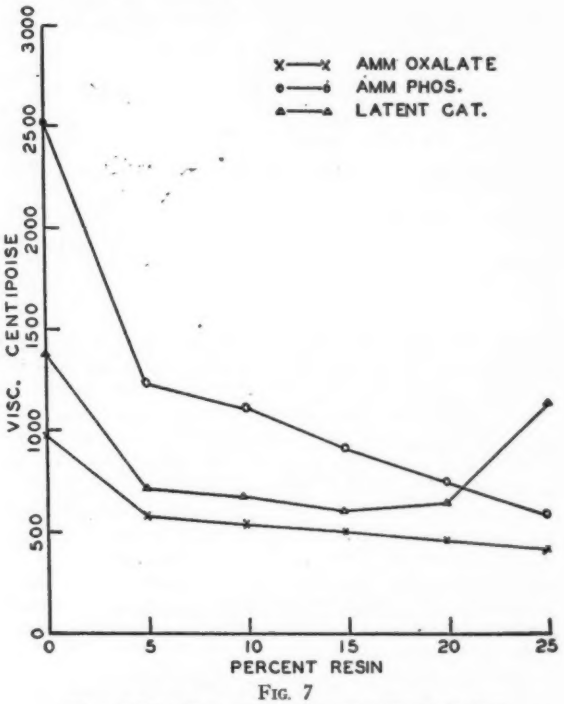

Fig. 7

Effect of Urea Resin on Acid Converted Starch Coatings

In addition to urea resins, other types have been investigated, most interesting of which is an alkali curing ketone aldehyde resin. Differing from the urea type, this material converts at a pH above 7.0 and in the neighborhood of 10. While it is not possible thus far to obtain as good results as with urea resins, this work is still in its earlier stages. Coatings prepared from this product, used in conjuction with starch, do have a definitely improved water resistance and have a slightly higher wax test and a better brightness than corresponding starch coatings. This type of resin shows definite promise in applications where

it is necessary to obtain water resistance at a higher pH than is possible with urea formaldehyde condensates. Here, as with urea coatings, it was found that the addition of the catalyst—in this case, an alkali—has a definite tendency to thicken the coating composition. This represents an obstacle which has not been completely overcome in the preparation of high solids slips.

Interpretation of Results

An evaluation of the laboratory work indicates that in the application of starch—urea resin—clay coatings on a commercial scale there are several points to be considered. The actual percentage of urea resin which is employed along with starch as a binder for the clay will, in practice, be determined largely by two things—the specifications to be met and the allowable coating cost. In the first case, the degree of wet rub required, along with the pick test and brightness, may indicate that it is desirable to have a composition containing a certain percentage of resin. In conjunction with the performance specifications, it may be necessary to consider the economics of using resin. The allowable increase in cost over straight starch as an adhesive should be determined. These two facts taken into conjunction will normally indicate the range of solid resin based on dry starch which can be used economically at the coating mill.

In coatings, as in adhesives, it must be borne in mind that the final or ultimate conversion may not be obtained immediatley after application, curing, and calendering. Starch-urea resin compositions in the presence of an acidic catalyst may continue to cure for as long as 3 to 4 weeks, and thus the ultimate water resistance may not be attained for this length of time. In most instances this is not particularly disadvantageous, as the paper will not usually be required to withstand extreme conditions for some time after it is coated. The rate at which this ultimate conversion is attained is determined by several factors including percentage of resin, percentage of catalyst, pH, time, and temperature of conversion, and time elapsed between coating and testing. In a large measure these factors are inter-related in their influence on cure rate. For example, the addition of a large amount of catalyst to the color, in conjunction with a short curing cycle at a low temperature, may produce a cure equivalent to that secured by the addition of a small amount of catalyst with a long curing cycle. In this connection, it is well to remember that the use of excessive amounts of acidic catalyst may unduly thicken color and shorten pot life.

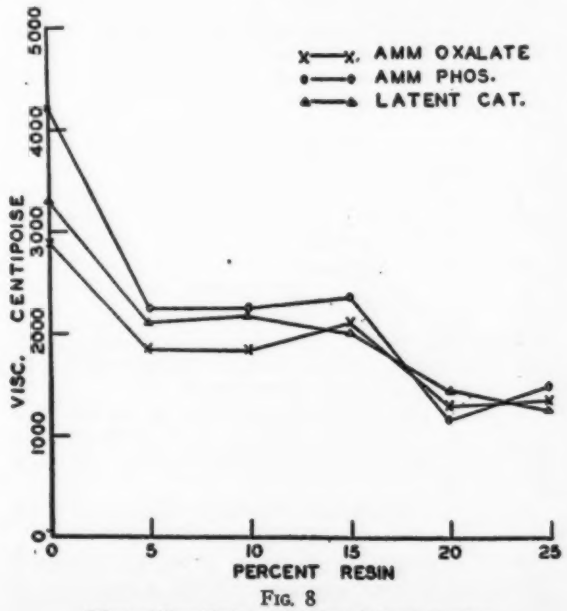

FIG. 8

Effect of Urea Resin on Chlorinated Starch Coatings

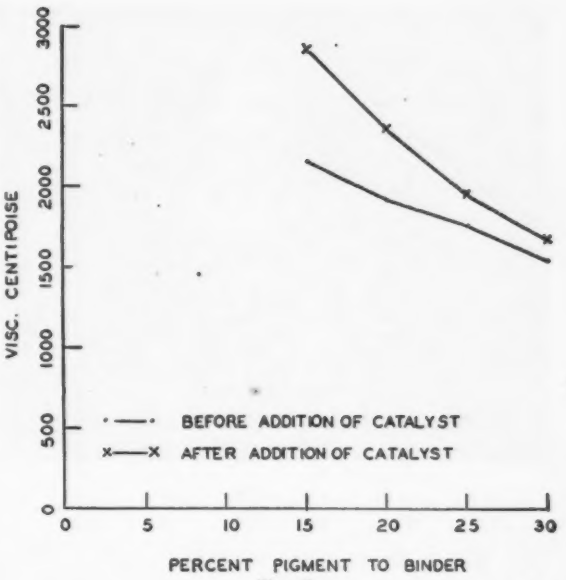

FIG. 9

Effect of Pigment to Binder Ratio on the Viscosity Coating Colors

It can also be stated that the use of buffered or borated starch is to be avoided when urea resins are used. Buffers used in starch adhesive and coating compositions impede the conversion of the coating and necessitate the use of large amounts of catalyst. The pH of the sheet to be coated also has a bearing on the conversion rate, where desirably small amounts of catalyst are used. It has been found that a sheet having a pH of above 7 will actually retard the cure, whereas sheets having a pH below 6.5 appear to hasten it.

It is necessary to take these details into consideration if a coating having ink receptivity is desired. Under the proper conditions, coatings which are nearly neutral, but which have a marked degree of wet rub, may be prepared. Coatings at higher pH's have been found to posses better printing characteristics.

The work further indicates that the use of properly catalyzed urea resins may actually decrease the viscosity of starch coatings, rather than increase them. Coatings containing this resin have a thixotropic character, and in applications such as brush or roller coating, the agitation provided may be sufficient to produce a uniform coat from a color which has a high apparent viscosity.

Paper coated with starch-urea resin-clay compositions shows a marked improvement in brightness over straight starch-clay coatings. This improvement appears to be roughly proportional to the amount of urea resin added. Commercially available urea formaldehyde resins are nearly water white in color, and the improved brightness may be due merely to dilution of the starch binder. In the experimental work no attempt was made to mask the yellowish color due to the starch adhesive by use of a suitable blue

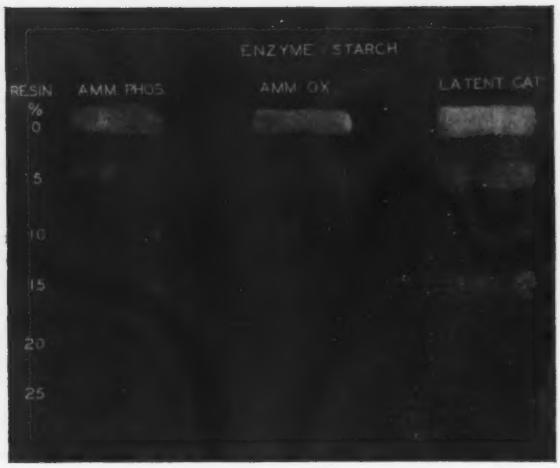

FIG. 10

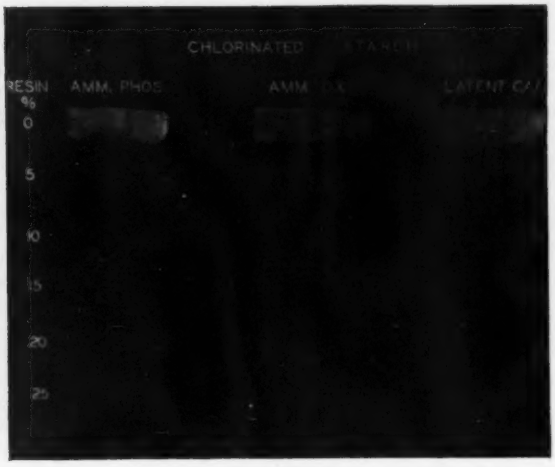

FIG. 12

dye. This is, however, more or less standard practice in the industry and may also be done with coating compositions containing urea resins.

Besides increasing the brightness, the addition of urea resins to the coating color tends to give a higher wax test. At the same pigment to binder ratio, the incorporation of 15% urea resin, based on the dry starch in the coating composition, will increase the Dennison wax by one whole number. The urea resin appears to stabilize the starch film and gives it a slightly better continuity. This is also shown by the decreased film shrinkage discussed in an earlier paper *(2)*.

Mill trials have indicated that the use of urea resins along with starch in coating compositions is commercially practical. Paper coated with these materials has advantages which we are certain will assure it a place in the coated paper field along with straight starch and casein adhesives.

Conclusions

An examination of the data above indicates that the use of urea resin with starch clay coatings decreases their viscosity. In general, this has been found true of both the catalyzed and the uncatalyzed compositions. The viscosity of these colors is a function

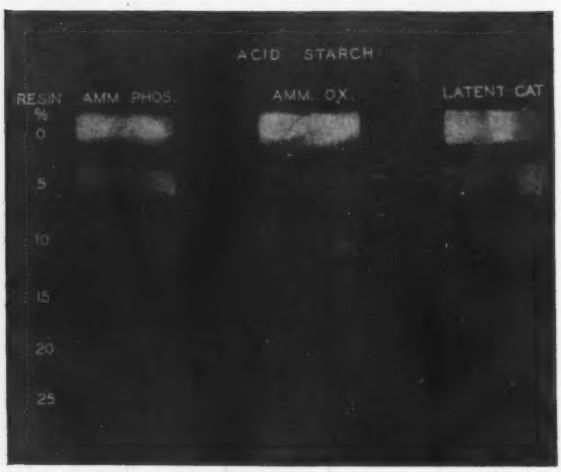

FIG. 11

TABLE I.—TABLE OF COMPOSITIONS

Per cent [1]	0	5	10	15	20	25
Starch	120	120	120	120	120	120
Clay	360	384	404	424	450	480
Resin [2]	...	6.4	13.3	21.0	30.0	40.0
Water	560	600	630	660	700	752
Wetting agent...	1.8	1.9	2.0	2.1	2.2	2.4
Enzyme [3]	0.7	0.7	0.7	0.7	0.7	0.7

[1] Per cent of resin to starch.
[2] Solid resin.
[3] Enzyme used only in enzyme conv. starch.

of the per cent catalyst added. The greater the amount of catalyst, the higher the viscosity. Of the catalysts employed and reported in this paper, ammonium oxalate appears to give the best viscosity characteristics in the finished color. Increasing the amount of binder used decreases the effect of the catalyst on the viscosity of the composition.

Employing urea resins along with starch, it is possible to produce coatings which have improved water resistance. For normal applications, the use of 15% urea resin solid based on dry starch will probably be found to give economical performance at 18 to 30% binder based on pigment, depending on the specifications to be met.

The addition of urea resin to the starch composition proportionately improves the brightness and wax over the range tested, the pigment to binder ratio remaining constant.

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TAPPI Notes

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Application of the Electric Hygrometer To the Determination of Water Vapor Permeability at Low Temperature*

By J. A. Van den Akker[1]

Abstract

Of the various methods currently in use for the determination of water vapor permeability of moisture-resistant barriers, the hygrometric methods employing an electric hygrometer of special design are the most sensitive. An intrinsic difficulty with the gravimetric method at low temperature (0°F. and below) is the extremely small daily weight loss of cups sealed with good barriers. The development of special electric hygrometers having very small moisture absorption capacities has made possible the measurement of small water vapor permeability at low temperature. The special hygrometer and associated circuit are described. Three hygrometric methods employing this hygrometer for the low temperature determination of WVP are described and discussed. These are the dynamic method, *the* comparison method, *and the* sweep-gas method. *The most sensitive and rapid in use is the dynamic method, which is recommended for industrial control purposes and appears to be suitable for the testing of sheets (such as resins and waxes) of a nonhygroscopic nature. The comparison and sweep-gas methods are steady-state processes, and require the establishment of equilibrium; they are, accordingly, more time consuming than the dynamic method but yield results that are theoretically free of error resulting from sorption phenomena. Sources of error are discussed and a few precautions are suggested.*

The development, during recent years, of improved moisture-resistant films and the increasing need for reliable measurement of the water vapor permeability (WVP) of moisture barriers at low temperatures have prompted the Subcommittee on Instrumentation Research of the American Paper and Pulp Association to recommend the development, at the Institute, of new techniques. The research, initiated in 1940, was directed in its early phases to the evolution of hygrometric methods at ordinary temperatures. This work has been described in several reports to the A.P.P.A., all but one of which have appeared in the PAPER TRADE JOURNAL *(1)*. More recently the focus of attention has been on the development of techniques for applying these methods to the determination of WVP at low temperatures (0° F. and below). A detailed description of the problems encountered and of the experimental methods employed to solve them is presented in a recent report submitted to the A.P.P.A. *(2)*.

An intrinsic difficulty with the gravimetric method at low temperature can be illustrated with a numerical example. A fairly good barrier having a WVP of 0.1 gram per 100 sq. in. per day for a relative humidity differential of 50% at 73° F., may be taken for the purpose of estimating the daily weight loss at 0° F. If the same relative humidity differential were to be employed, the difference in partial pressures of the water vapor on the two sides of a specimen at the low temperature would be only 1/20 of that existing at room temperature. Assuming a specimen area of 20 sq. in., and neglecting the temperature effect on permeability to water vapor, the daily weight loss is found to be $(1/20)(20/100)(0.1) = 0.001$ gram. It is evident that the gravimetric method may not be expected to yield reliable information unless the test is permitted to run over a period of many days, and reasonably good accuracy could then be obtained *only if the weighings were made at the low temperature*. The gravimetric method may be of value for reference purposes, but it is undesirably slow for the control of production of moisture-resistant sheeting. A certain minimum time is required for a moisture-resistant sheet to equilibrate with the conditions of testing; it is desirable to have a method of testing which will evaluate the WVP in as short a time as possible after the elapse of that equilibration time.

Several years ago it was proposed that WVP be measured by means of a purely hygrometric method *(1,* Part I). Good sensitivity was expected on the basis of the fact that the change in mass of water vapor in a small volume of air corresponding to a 1% change in relative humidity is very small. It was expected, and the expectation has been realized, that very low rates of transfer of water vapor could be evaluated through measurement of changes in relative humidity. An important phase of the problem was the development of a hygrometer which would be small, accurate, sensitive, and which would not sorb an appreciable amount of moisture in the act of measuring relative humidity. Thanks to the ingenuity, care, and patience of Mr. Willmer A Wink, who is largely responsible for the laboratory work on this project, a very satisfactory modification of the Dunmore electric hygrometer *(3)* was evolved. It is desirable at this point to describe this special electric hygrometer, because it would seem to provide the most promising basis for any method of measuring WVP on the hygrometric principle.

Electric Hygrometer for WVP Determination

The Dunmore hygrometer *(3)* in its usual form is satisfactory for the measurement and control of relative humidity in fairly large spaces, such as those in cabinets, rooms, and ducts. Its moisture absorption capacity is, however, too large for the hygrometric WVP methods. The commercial literature of one producer of electric hygrometers of this type claims that relative humidity is measured without absorption of moisture; a statement of this sort is, of course,

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relative, and it is true that the amount of moisture absorbed is entirely negligible when the supply of water vapor is large, as in a cabinet having a volume of 1,000,000 ml. However, the earliest attempts to employ electric hygrometers of reduced size indicated the need for further reduction in moisture absorption capacity, and the problem became acute when WVP determinations were first attempted at 0° F.—the latter statement can be appreciated when it is realized that the change in moisture content of 100 ml. of air at 0° F. corresponding to a change in relative humidity of 1% is only 1 microgram.

The present hygrometers are of extremely simple design. A sketch, showing various details of an element mounted on a glass plate, is given in Fig. 1. The body of the element is a small square of glass (about ½ inch on a side and ⅛ inch thick), on which a very thin film of platinum (opaque in strong light) has been deposited by evaporation in a vacuum or by the cathodic sputtering process. Prior to the deposition of the platinum film, the glass body is mounted on a metal plate and a fairly fine wire (roughly B&S gage 18) is pulled tautly from one edge of the metal plate down over the middle of the glass body to the opposite edge of the plate. This wire, which is subsequently removed, serves to form a gap in the film, thus providing two platinum film electrodes. (Where one wishes to prepare several elements, glass strips ½ inch wide and a few inches long are placed side by side on the metal plate, and a wire is drawn tautly over the long axis of each strip. Prior to the coating process, the strips were scratched cross-wise on their bottom surfaces, at ½-inch intervals, so that ½-inch square elements could be quickly formed after the deposition of the platinum film by breaking the glass strips at the scratch lines. This method of preparation has the added advantage of ensuring that the edges of each glass square at the ends of the gaps will be free of short-circuiting films of platinum.)

A film of partially hydrolyzed polyvinyl acetate (PVA) [containing a suitable, low percentage of lithium chloride (LiCl)] is applied to the center of the gap with a small glass rod having a tapered, fire-polished tip. The area of the spot thus formed is about 2 sq. mm. Further details are presented in Report 30, Part VIII, to the A.P.P.A. *(2)*.

After the LiCl-PVA film has been allowed to age for several days, the element is mounted in the WVP apparatus. As shown in Fig. 1, the simplest means for mounting is provided by a pair of spring-metal fingers (e.g., phosphor-bronze), which serve to hold

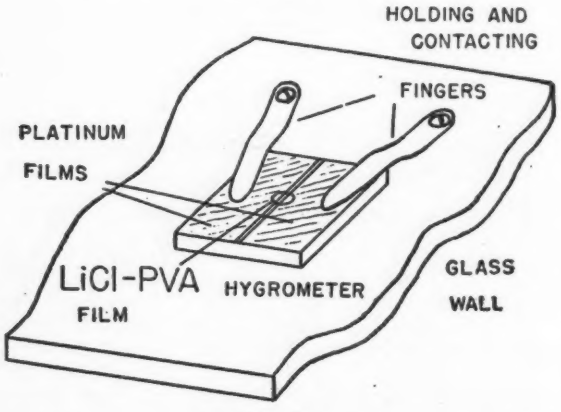

FIG. 1
Sketch of electric hygrometer for WVP determinations

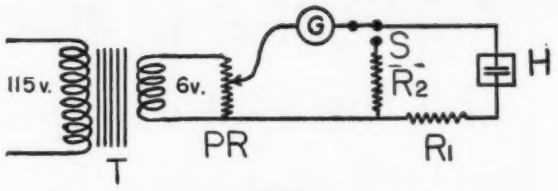

FIG. 2
Circuit for the current measuring device. T—Step-down transformer; PR—Potentiometer rheostat for control of voltage; G—Galvanometer, of sensitivity about 1 to 5 × 10^{-8} amp./div., equipped with instrument rectifier; S—s.p.d.t. switch having good electrical insulation; R_1—Protective resistance (about 10,000 ohms); H—Electric hygrometer; R_2—Resistance chosen to make the series combination of G and R_2 a voltmeter.

the element in place and furnish electrical connection between the platinum film electrodes and brass bolts through a large glass base plate or wall of a glass vessel. The connection between bolts, nuts, and glass on the opposite side of the wall are rendered gas tight by the application of hot wax.

A single, simple electrical unit, the circuit of which is shown in Fig. 2, enables one to measure the current through any one of a large number of hygrometers. Connection of the circuit to a unit is easily made by means of a pair of small "alligator clips." The voltage applied to the series combination of galvanometer, hygrometer, and protective resistance is observed and adjusted by switching the galvanometer to R_2 and manipulating the potentiometer rheostat PR. This voltage, which may be from about 1 to 5 volts, is held at the value adopted in the standardization of the hygrometer. The galvanometer is then switched to the hygrometer, the deflection of the galvanometer is noted, and the relative humidity is read from the calibration chart for the particular hygrometer. Typical calibration curves for various applied voltages are given in Report 30, Part VIII, to the A.P.P.A. *(2)*.

The required sensitivity of the galvanometer depends upon the temperature of the hygrometer. At room temperature, the galvanometer may be a microammeter having a range from about 0 to 50 microamperes, the range depending upon the applied voltage. However, at low temperatures, the effective resistance of a small hygrometer of the type described is quite high, and the galvanometer should have good sensitivity, preferably of the order of 1 to 5 × 10^{-8} ampere per division. If equipped with a series of sensitivity taps, the same galvanometer may be employed over a wide range of temperatures. The galvanometer must, of course, be equipped with an instrument rectifier.

The hygrometers may be conveniently calibrated at room temperature by exposing them to various relative humidities fixed by saturated salt solutions. Calibration at low temperature is, however, a very different matter. The relative humidities over saturated salt solutions at temperatures in the neighborhood of 0° F. are much too high to be useful, because they are typically of the order of 90 to 100%. Accurately known relative humidities may be produced and held constant by means of a double cryostat *(2)*. By means of refrigerating equipment and electrical controls,* the temperatures of a pair of alcohol baths are controlled within very small limits; one bath, containing the hygrometric apparatus, is maintained at, say, 0° F., and the other bath, always colder, is controlled at a temperature which, by calculation, gives

* Thermoregulators control heaters rather than the refrigerating equipment.

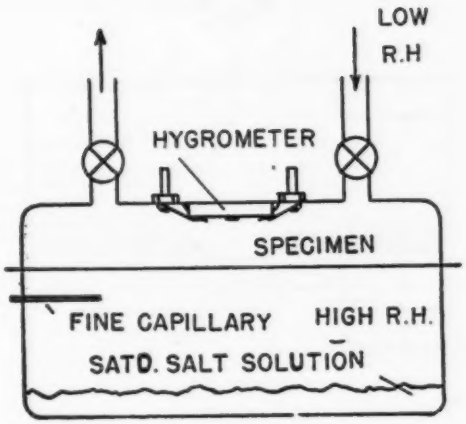

FIG. 3
Schematic sketch of apparatus for the dynamic method

rise to a saturated water-vapor pressure over ice that is equal to the desired vapor pressure in the equipment in the warmer bath. Two methods are employed to form a vapor bridge between the two cryostats. In one, an H-shaped glass vessel of rather large dimensions is lowered into the cryostats (which are side by side) in such manner that the left leg of the H, which contains the hygrometer to be calibrated, is immersed in the warmer bath and the right leg, which contains a small amount of ice, is lowered in the colder bath. The vessel is evacuated to reduce diffusion resistance to a negligible value, and is sealed off. The establishment of equilibrium requires a surprisingly short time. When the hygrometer current has been noted and recorded, the temperature of the colder bath is adjusted to a new value, and the process is repeated until an adequate calibration has been obtained. The other method is fundamentally the same, but involves a slow stream of air which first passes through a coil of copper tubing in the colder bath, thence through a coil in the warmer bath (in which the temperature of the air attains that of the warmer bath), and finally passes to the hygrometer or WVP apparatus in the warmer bath. The inner surface of the coil in the colder bath had been previously coated with ice by condensation, so that the air leaving the first coil is saturated with water vapor. This latter system is used in the new hygrometric method for measurement of WVP at low temperature.

Determination of WVP by Hygrometric Methods Employing the Small Electric Hygrometer

Dynamic Method. The most simple, sensitive, and fast method has been termed the dynamic method because it involves unsteady-state and nonequilibrium conditions. The development of this method has been given a great deal of attention because of the great need in the industry for faster control testing instruments. When allowance is made for the moisture absorption capacities of the test unit and of the side of the barrier facing the hygrometer, reasonably accurate results can be expected *(2)*. So far, promising results have been obtained for wax and resin films that are self supporting, or have paper on only one side. In the case of papers laminated with a moistureproof barrier, the absorption capacity of the paper on either side of the barrier is so high (relative to the moisture contained in air at 0° F.) that only inaccurate estimates of WVP can be made. The great advantage of the method is that, where applicable, a determination of WVP can be made in minutes or hours after the preconditioning period required for a specimen to equilibrate with the high and low humidities with which its faces are placed in contact. The time depends, of course, on the permeability of the barrier, being shorter for more permeable specimens. After the preconditioning period, a determination of WVP as low as 0.001 gram/100 sq. in./day at 0° F. and R.H. differential of 73% can be made in 4 to 5 hours *(2)*.

A schematic sketch showing the arrangement for the testing of WVP with the dynamic method is given in Fig. 3. The apparatus is contained in a liquid-tight vessel (not shown) which is immersed in the warmer cryostat. Dry air of known relative humidity from the colder cryostat is circulated over the specimen during the preconditioning period. The relative humidity of the air below the specimen is maintained at a constant, high value by means of a suitable saturated salt solution. When the test is begun, the valves are closed and the time is noted. The relative humidity is subsequently measured at suitably spaced times, and the data are plotted against the time. The *initial* rate of change of the relative humidity in the upper space is obtained from the plotted points. In this work, the relative humidity is not expressed in per cent, but in units of the scale on which the relative humidity of a saturated atmosphere is 1.0. The theory enabling one to calculate WVP from the initial rate of change of the relative humidity has been given in Parts V and VII of Report 30 to the A.P.P.A. *(1)*, and the author is pleased to report that the theory has been simplified in Part VIII of that report *(2)*.

The fine capillary shown in Fig. 3 serves to equalize the pressure in the lower compartment with that of the atmosphere. (The diffusion of water vapor through the capillary has no significant effect on the relative humidity in the lower chamber.)

For the purposes of research, WVP determinations have been made on one specimen at a time because of limited space in the cryostat. Where it is necessary to test a large number of specimens, it is suggested that a number of units of the kind previously described for work at room temperature *(1)* be prepared for use in a low temperature room in which the temperature is controlled and the relative humidity maintained at a constant, low value. Each unit, during the preconditioning period, would then consist only of the lower vessel with the specimen sealed in place. One, or several, upper compartments (each equipped with a calibrated electric hygrometer) could then be placed over the specimens (using greased seals) at the appropriate times, and the observations made at suitable intervals. In this case, the upper compart-

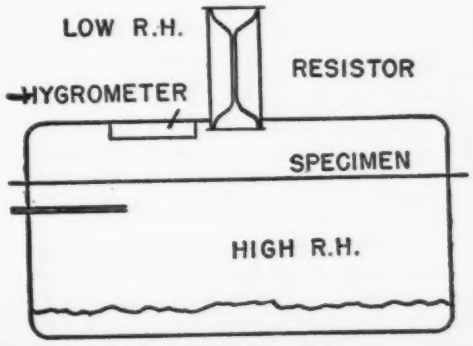

FIG. 4
Schematic sketch of apparatus for the comparison method

ments would be of very simple construction, because tube and valve connections would not be necessary. As stated earlier, a single electrical unit for the measurement of current would suffice for the testing of a large battery of test units. As a word of caution, the uncovered hands of operators in a room at 0° F. are to be regarded as hot, and should be brought into close proximity with the test units only momentarily, if at all. During the preconditioning period there should be an adequate movement of the room air over the specimens; where the WVP is very low, it is not necessary to provide as high air velocity as recommended in the earlier literature *(4)*.

Comparison Method. The originally proposed hygrometric method (*1*, Part I) was a steady-state comparison method. This method, although sensitive, is not as fast as the dynamic method because it requires that equilibrium between the specimen and the atmosphere above it be established. However, this method is free of error arising in the sorption of moisture by the upper surface of the specimen, the hygrometer, and other surfaces in the compartment containing the hygrometer.

The comparison method may be understood by referring to the sketch presented in Fig. 4. At equilibrium, the rate of diffusion of moisture through the specimen is equal to that of moisture passing through a standardized resistor. The resistor (one of a set covering a large range) is selected to have a permeability of the same order as that of the specimen, so that the equilibium relative humidity measured by the hygrometer in the upper compartment will be nearly mid-way between the fixed high and low relative humidities in the spaces, respectively, below the specimen, and outside of the test unit. If the rate of diffusion of moisture through the specimen is directly proportional to the relative humidity differential across the specimen, we can employ the relation

$$P_{\text{specimen}} = P_{\text{standard}} \times \frac{\Delta \text{ (R.H.) standard}}{\Delta \text{ (R.H.) specimen}}$$

to calculate the permeability of the specimen. This equation states that the permeabilities of the specimen and resistor are in inverse proportion to the relative humidity differentials existing across them at equilibrium.

It is well known that the rate of diffusion of moisture through certain materials does not vary in direct proportion with the relative humidity differential. For this reason, an attempt was made a few years ago, to develop variable resistances which, during the course of observations, would be adjusted to arrive at an equilibrium relative humidity in the upper compartment equal to a standard, predetermined value. All specimens would then be subjected to the same relative humidities in contact with their two sides, and to the same relative humidity differential. In particular, if the intermediate relative humidity were chosen to lie mid-way between the high and low humidities, the permeability of the specimen would be equal to that of the resistor, and its value could be read directly from the scale of the variable resistor. This promising approach to the problem awaits the development of a reproducible, yet cheap, variable resistance.

The use of fixed resistors should not lead to appreciable error if the intermediate relative humidity (through choice of resistor) can be made close to a standardized, predetermined value, because the curves relating rate of diffusion and relative humidity differential are not badly non-linear over small ranges.

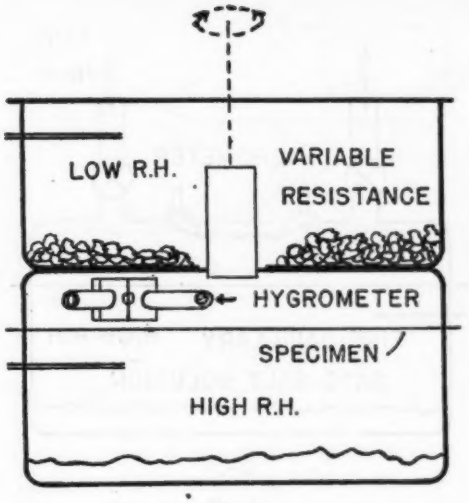

FIG. 5
Schematic sketch of apparatus for the comparison method, designed to accelerate equilibrium

If this approach is attempted, it is suggested that the resistors be prepared from glass capillary tubing, flared and covered at each end with thin permeable sheeting (such as tissue paper). There are, as yet, no data to recommend on capillary lengths and bores for various ranges of permeabilities.

The resistors employed in this method (whether fixed or variable) should be calibrated by careful observation of rate of loss of weight of a testing unit containing no specimen. In this standardizing work, the fine capillary in the side wall of the lower compartment should be sealed (a tiny drop of oil will accomplish this and permit pressure equalization), and great care should be exercised in obtaining a good seal between the two compartments.

The lower end of a resistor should be near the top wall of the upper compartment, because close proximity of that end to the specimen in normal testing would no longer permit us to assume that the diffusion resistance of the air in the upper compartment is negligible.

Testing with the comparison method can be accelerated if the specimen is preconditioned with air above the specimen (for example, the air of the room) having a relative humidity equal to the end-point value. It is then necessary to furnish the testing unit with a third compartment enclosing the upper end of the capillary in a space of low relative humidity, as shown in Fig. 5. This can be accomplished, of course, by distributing a desiccant over the floor of the third compartment. If this desirable modification is attempted, the electrical leads to the hygrometer should be brought through the side wall of the middle compartment.

If the specimen is preconditioned as suggested in the foregoing paragraph, the *initial* relative humidity will be equal to the end-point value. It therefore behooves the operator to observe (at not too frequent intervals of time) slight variations of the relative humidity away from the predetermined value, and to make suitable adjustment of the resistance (assuming the more ideal case of a standardized variable resistance). When he believes that balance has been attained, he should continue his observtion for a suitable period of time (a fraction of an hour, or many hours, according as the permeability is high or low.)

Sweep-gas Method. The high sensitivity of the electric hygrometer would seem to make it possible, as several persons have recently suggested, to measure WVP by means of a sweep-gas method similar to that employed by Davis *(5)* (who gives references to earlier workers) for the purpose of measuring the permeability of sheeting to gases. This method, like the comparison method, is of the steady-state class and would be free of error, at equilibrium, resulting from sorption of moisture by the specimen, hygrometer, etc. The method can be explained by reference to the schematic sketch given in Fig. 6, which depicts a simple form of apparatus embodying the hygrometric principle that is called into play. Two compartments are separated by the specimen. The lower compartment contains a saturated salt solution, which fixes the relative humidity of the air in contact with the lower side of the specimen at a definite, high value. Dry air, of known initial relative humidity r_1 (as determined by hygrometer 1), and of known volume rate of flow (as determined by a calibrated flow meter), enters the upper compartment, as shown. On the assumption that the air in the upper compartment is thoroughly mixed by circulation and turbulence, the air leaving the upper compartment will have a final relative humidity r_f (as determined by hygrometer 2) which can be related to the volume rate of flow of the air, the permeability and area of the specimen, and the initial relative humidity of the entering air.

Evidently there are at least two procedures which could be followed. In one, the volume rate of flow could be set at a suitable standard value, and the increment $r_f—r_1$ in the relative humidity of the streaming air could be measured. This procedure would result in a variable relative humidity differential across the specimen, the differential being smaller for specimens having larger permeability. In view of the earlier discussion of the undesirability of this state of affairs in the testing of certain types of barrier materials, a procedure should be sought which yields a standard relative humidity differential across all specimens; furthermore, in view of the very great range in permeability of different materials, a single standard rate of flow would not prove to be feasible. It would seem to be better practice to adjust the volume rate of flow of the air to obtain a standard value of the final relative humidity, r_f, because the relative humidity differential across the barrier would then be the same for all specimens. The range in volume rate of flow would be very great (corresponding to the large range in permeability of different materials), but this could be easily handled by having two or more calibrated flow meters.

If it be assumed, for the sake of discussion, that flow rate is varied to obtain a standard value of r_f, we may perform a few calculations indicative of the scope of the sweep-gas method. Let us consider three cases: (a), WVP=0.001 gram/100 sq. in./day for the given conditions of low temperature (taken as 0° F.) and relative humidity differential; (b), WVP=0.001 gram/100 sq. in. /day; (c), WVP= 0.1 gram/100 sq. in./day. There appears to be no objection, in the employment of this method, to the use of a large specimen, and the area may be taken literally equal to 100 sq. in. (if the specimen tends to sag under its own weight—the diameter of the disk would be about 11.3 inches—it may be supported by a wax-coated metal grid). For the purposes of estimation, take the density of saturated water vapor at 0° F. as 0.000001 gram/ml. Two considerations enter in the choice of the difference $r_f—r_1$. If this is made large, imperfect mixing of the air in the upper compartment will result in error caused by local variations in the relative humidity differential across the specimen; furthermore, an unnecessarily large value of the difference $r_f—r_1$ will cause the rate of flow to be needlessly low. On the other hand, $r_f—r_1$ should be fairly large in comparison with the error of the hygrometers. Where temperatures are well controlled, the constancy of calibration of a hygrometer at 0° F. is of the order of 0.2% R.H. If tubing and valving are arranged so that a single hygrometer can be employed to measure both r_1 and r_f a gradual drift in calibration will in itself cause no error, and the uncertainty in the determination of $r_f—r_1$ would probably be less than 0.2%. It would seem to be reasonable, then, to let $r_f—r_1$=0.050 (5.0% R.H.). The change in moisture content of 1 ml. of air corresponding to this difference is (0.050) $(10^{-6})=5 \times 10^{-8}$ gram/ml. Therefore, the rates of flow for the three cases would be:

Case A, $V = 0.001/(5 \times 10^{-8}) = 20{,}000$ ml./day = 0.23 ml./sec.
Case B, $V = 0.01/(5 \times 10^{-8}) = 200{,}000$ ml./day = 2.3 ml./sec.
Case C, $V = 0.1/(5 \times 10^{-8}) = 2{,}000{,}000$ ml./day = 23 ml./sec.

These rates appear to be quite feasible.

Some practical considerations come to mind. If the entrance tube to the upper compartment is not tapered to form a nozzle, the linear velocity of the air entering the compartment will be insufficient to cause mixing (particularly at the lower flow rates) and, as a result, the relative humidity above appreciable portions of the specimen may gradually rise to fairly high values. During this rise (which may require many hours), unsteady-state conditions would exist, and not all of the moisture diffusing through the specimen would leave with the departing air stream. Moreover, the relative humidity differential existing across the specimen would not have the standard value. However, if the entrance tube is equipped with a nozzle of size appropriate to the range of flow rate, velocity can be imparted to the air which should cause circulation of the type indicated by the dotted flow lines shown in Fig. 6. For example, if the rate of flow is 0.3 ml./sec., a nozzle having a bore of 0.014 inch would produce an air velocity of 300 cm./sec. (about 10 ft./sec.). The effectiveness of a nozzle should be checked by observing the circulation with smoke. It might prove to be desirable to correct the relative humidity indication of hygrometer 1 for the pressure drop across the nozzle.

The capillary of a flow meter employed for the lowest range of flow should be protected from fouling by means of a dust-collecting plug in its entrance tube.

In Davis' method for measuring gas permeabilities,

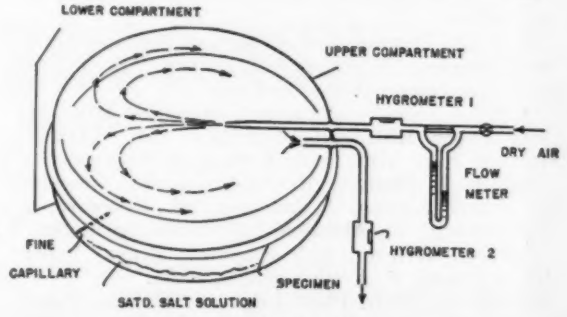

FIG. 6
Schematic sketch of apparatus for the sweep-gas method

the total specimen area is made large by arranging the apparatus to accommodate several specimens in a tower, the upper compartments of each cell being connected in series. The computations made above indicate that the added complexity of the tower arrangement would not be warranted unless, of course, the permeability to be measured is substantially lower than 0.001 gram/100 sq. in./day.

The flow meters should be calibrated at the temperature at which they are to be used. If the flow meters are used at room temperature (and the air is cooled to low temperature by passage through a coil or other heat exchanger), correction should be made for the change in temperature of the air, as well as for the pressure drop occurring at the nozzle. In the latter case, the dry air passed through the flow meter should be sufficiently well desiccated to yield the desired low relative humidity of the air stream entering the upper compartment. In this connection, it should be remembered that, apart from pressure corrections, the partial pressure of the water vapor in the line at room temperature is equal to that of the water vapor entering the apparatus at the low temperature.

As in any other method, an appreciable time may be required for the establishment of equilibrium, and the observations should be made at not too frequent intervals to establish that equilibrium has been attained. If the upper side of the specimen is covered with paper or other hygroscopic material, the time required for equilibrium at 0° F. may be very great.

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3. Dunmore, F. W. Improved electric hygrometer. *J. Research Natl. Bur. Standards* 23, No. 6: 701-714 (Dec., 1939).
4. Abrams, A., and Chilson, W. Vapor transmission through papers. *Paper Trade J.* 91, No. 18: 175-180 (Oct. 30, 1930); *Tech. Assoc. Papers* 14: 379-384 (1931).
5. Davis, D. W. Isostatic method for determining the gas permeability of sheet materials. *Paper Trade J.* 123, No. 9: 33-40 (Aug. 29, 1946).

Chemistry and Technology of Plastics

The Reinhold Publishing Company has just issued "The Chemistry and Technology of Plastics" by Raymond Nauth, consultant. (522 pp. 6 x 9.) Although this book is somewhat technical the author has endeavored to bring out many modern, practical, and industrial phases of the subject.

The subjects covered include: thermosetting plastics, amino resins, amine-aldehyde resins, the alkyds, laminates, vinyls, acrylics, cellulose plastics, regenerated cellulose, synthetic rubber, protein plastics and natural resin, and resin bonded plywood and veneer. The book is profusely illustrated.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y., at $9.50 per copy.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

John I. Adams, Director of Research, Schweitzer Paper Co., Mt. Holly Springs, Pennsylvania, a 1936 graduate of Mercer University.

Alfred W. Anthony, Jr., President-Treasurer, Pease, Anthony Equipment Co., Waltham, Massachusetts, a 1915 graduate of Brown University with Ph.B. degree.

Frederick Cyster, Chief Chemist, John Dickinson & Co., Ltd., Croxley Mills, Watford, Herts, England.

C. Lee Dryden, Manager, Central Plant Engineering, Marathon Corporation, Menasha, Wisconsin, a 1925 graduate of the University of Cincinnati.

Andre Garteiser, Director of Rai Wire Works, Les Toiles Metallique de Raitillieres, Paris, France, a 1912 graduate of the Universite de Paris.

Theodore H. Geiger, Research Chemist, Oxford Paper Co., Rumford, Maine, a 1927 graduate of Tufts College.

Chester L. Knowles, Partner, Knowles Associates, New York, New York, a 1914 graduate of Brown University with a Ph.D. degree.

Joseph L. Lanford, Paper Mill Engineer, Sonoco Products Co., Hartsville, South Carolina. Attended Clemson College.

Torolf I. Lassenius, Technical Director, Finnish Cellulose Association, Helsingfors, Finland, a 1934 graduate of Abo Akademi.

John R. Leggett, Assistant Master Mechanic, The Barrett Div., Allied Chemical & Dye Corp., Elizabeth, New Jersey, a 1938 graduate of Georgia School of Technology.

Robert A. Lemieux, Service-Man, Hercules Powder Co., Holyoke, Massachusetts, a 1938 graduate of Lowell Textile Institute.

William S. McDonald, Chief Technician, Container Div., International Paper Co., Georgetown, South Carolina, a 1935 graduate of Furman University.

Harry T. Newman, Director of Laboratories, Central Testing Laboratory, New York, New York. Attended Brooklyn Polytechnic Institute.

Charles J. Pearson, Superintendent of Board Mill, American Coating Mills, Elkhart, Indiana.

Jack B. Pohlenz, Director, Massachusetts Institute of Technology Field Station, Eastern Corp., Bangor, Maine, a 1944 graduate of the University of Colorado.

Miss Sophia Polovina, Librarian, Central Research Laboratories, General Foods Corp., Hoboken, New Jersey, a 1940 graduate of the Carnegie Institute of Technology.

Frank L. Putnam, Sales Engineer, Improved Paper Machinery Co., Glens Falls, New York. He attended the University of Michigan.

Russell C. Shearer, Manager, Merritton Div., Alliance Paper Mills Ltd., Merritton, Ont., Canada. Attended New York State College of Forestry.

William L. Stafford, Research Chemist, Hercules Experiment Station, Wilmington 99, Delaware, a 1939 graduate of Alabama Polytechnic Institute.

Peter C. Webster, Mill Engineer, Bengal Paper Mill, Raniganj, E. I. Rly, Bengal, India.

Charles L. Wills, Plant Engineer, Halifax Paper Co., Inc., Roanoke Rapids, North Carolina, a 1931 graduate of Virginia Military Institute.

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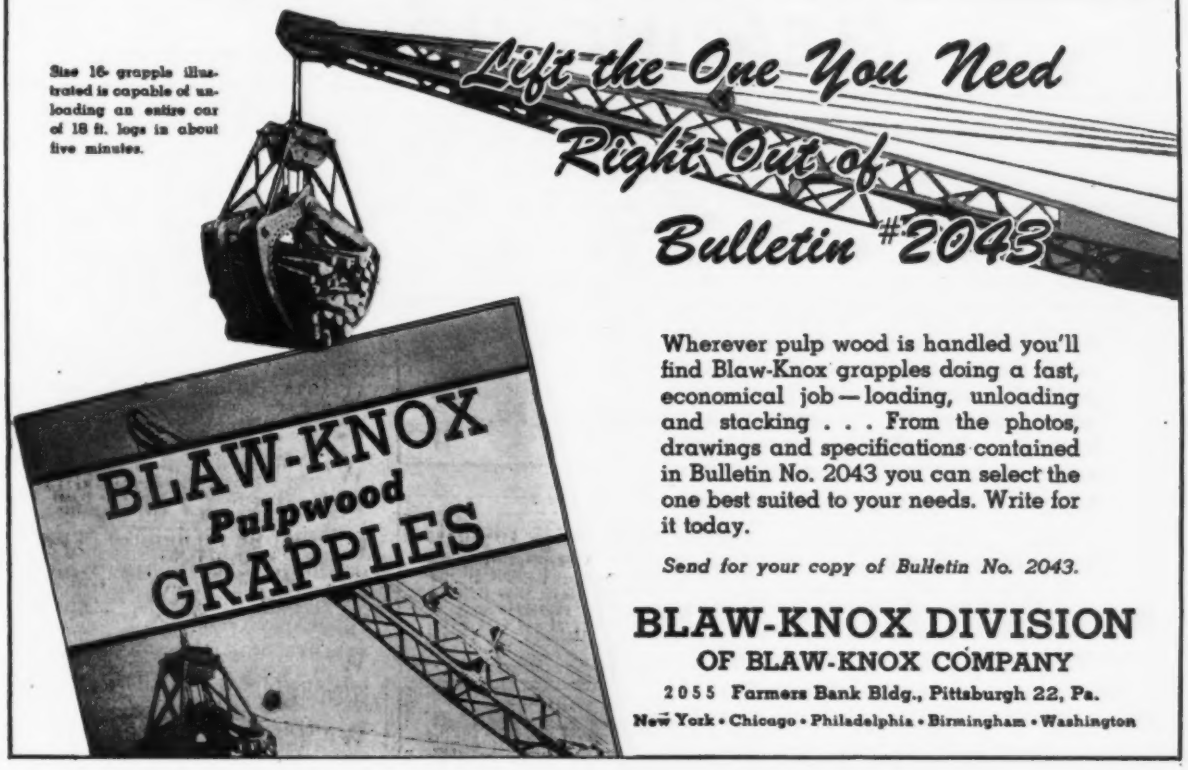

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Chemists and laboratory men for mills, also for demonstrating and selling chemicals
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Cameron rewinder operator

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Experienced paper mill millwrights as foremen, capable of erecting paper mill equipment for general shop and road work.

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Leading manufacturer of industrial instruments has unusual opportunity for graduate engineer experienced in the pulp and paper or textile industries; or one with knowledge of process control instrumentation who is interested in applying this knowledge to these industries. Work consists of process control engineering, writing of quotations, order follow-up, and sales correspondence with branch offices and customers. Some travelling involved. Reply giving complete details of experience, education and personal history to Box 47-388 care Paper Trade Journal. TF

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First Class Millwright to work in Board Mill and Folding Paper Box Plant. Housing Facilities available. Apply at once. Robertson Paper Box Company—Montville, Conn. Telephone Norwich 1824. J-12

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An unusual opening is available for plant manager in a one-machine mill located in Pennsylvania, manufacturing folding boxboard exclusively. Compensation will be in five figures, plus profit-sharing bonus.

We are only interested in communicating with men having thorough experience in this field.

In your reply, give full details of experience, personal qualifications, etc. Address Box 47-436 care Paper Trade Journal. J-19

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WANTED—Man to take charge of Finishing Department in mill making 25 tons per day. Require man who has had experience in the operation of cutters and trimmers. Address Box 47-393 care Paper Trade Journal. J-12

WANTED—Machine Tenders and Back Tenders for small machine in New England making high grade papers. Address Box 47-394 care Paper Trade Journal. J-12

WANTED—Tour Bosses for new Fourdrinier paper machine making light weight kraft specialties. Give personal data in first letter. Address Box 47-405 care Paper Trade Journal. J-12

CHEMIST OR TECHNICIAN for pulp laboratory control and development work. Small amount travel required and some experience necessary. Give full particulars of experience, salary expected, when available and personal details in first letter. Metropolitan area. Address Box 47-423 care Paper Trade Journal. J-19

WANTED—Good steady Beater Engineer for 3 machine mill making white and colored light weight tissues. Address Box 47-419 care Paper Trade Journal. J-12

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WANTED—Master Mechanic or Machinist for paper mill operating two cylinder and one Fourdrinier machines. Give personal data in first letter. Address Box 47-407 care Paper Trade Journal. J-12

CHEMIST OR CHEMICAL ENGINEER to take charge of quality control program for progressive Mid-Western Container Board Mill. Experience not necessary. Excellent opportunity for advancement. Please reply in own hand writing, include recent snapshot and indicate starting salary desired. Address Box 47-408 care Paper Trade Journal. J-12

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SALESMAN WANTED—Man wanted to sell chemical specialties to paper mills along Eastern Seaboard for old established manufacturer. Chemical training desirable but not necessary. Fine opportunity for right man. Address Box 47-440 care Paper Trade Journal. Jl-3

WANTED—Paper Salesman—fine and coarse grades, Metropolitan and adjacent area. Fine opportunity for man with experience to become established with fast growing concern. Address Box 47-448 care Paper Trade Journal. J-12

WANTED—Superintendent for 78" trim Fourdrinier paper machine running speed 500 to 700 feet per minute making light weight specialties. Address Box 47-457 care Paper Trade Journal. J-19

DO YOU USE A CARRIER *to* "THREAD" YOUR DRYER?

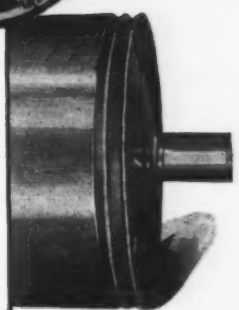
Carrier rope flange attached to end of dryer shown at left.

On start-up or after a break, do you use a Sheehan rope carrier to take the sheet over or is it done manually?

It is a simple matter to install a carrier—attach the required flanges to the ends of your dryers, mount the necessary pulleys, and install the ropes. So equipped, you will cut down on broke because your crew can act so much faster—and what's still more important, there would be far less danger of workmen being burned or injured by bad falls.

DOCTORS ON WET END DRYERS

While installing rope carriers mills also find it "broke-reducing" and "steam-saving" to install B-C doctors on the first few dryers. With doctors at this point, the sheet clings more tightly and dries more uniformly, as well as much faster.



The above view shows the flange groove in which the carrier ropes travel.

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EASTERN MILL WANTS experienced Board Salesman for New York Area. Excellent future. Address Box 47-447 care Paper Trade Journal. J-19

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SITUATIONS WANTED

MANAGER—Extensive experience in management and production of paper manufacturing and paper converting plants. Printing papers, facial tissue, cellulose wadding, waterproof, waxed, oiled and specialties. Address Box 47-446 care Paper Trade Journal. Jl-3

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SUPERINTENDENT—With a utility training covering entire field, including Mechanical Engineering. Capable of laying out a revamping program to modernize or upgrade a Boxboard or Specialty Cylinder Mill. Address Box 47-435 care Paper Trade Journal. J-19

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MAN, 39, with 35 years experience in paper making, desires connection with reliable company in the Tropics as Machine Tender, Boss Machine Tender or assistant superintendent, Tour Boss. Am steady, sober and reliable. Address Box 47-458 care Paper Trade Journal. Jl-10

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1—3000 lb. Holyoke-Iron Tub Beater.
3—1200 lb. E. D. Jones (no tubs).
1—1000 lb. Dayton Beater (no tub).
1—500 lb. Beater—iron tub.

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2—Buffalo Forge Company—Size 7—Duplex Conoidal steel plate Blowers. Ball bearing.

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1—5 roll—72" face.
1—7-roll 36" Holyoke Machine (supercalender).

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1—Shartle Brothers Centrap.

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1—50" Murray Chipper (8 knives).

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1—86" Waldron Creping Machine, practically new.

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1—30" diameter x 74" face.
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2—36" diameter x 84" face.
1—36" diameter x 80" face.
3—30" diameter x 72" face.

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14—Dillon Doctors — complete with accessories—98" face.

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2—30 h.p. Downingtown, enclosed drives, ratio 6 to 1—with clutch and cone pulley for paper machine.
1—Cleveland Worm Drive, Ratio 10 to 1.
2—Smith & Winchester mortise gear. Drives.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2.16 to 1. 900 RPM.
1—#1 Reeves Drive.
1—#2 Reeves Drive.
1—#5 Reeves Drive.
4—Horton vari-speed Pulleys.
2—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1).

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1—Philadelphia 50:1—1 h.p.—1200 r.p.m.
2—Philadelphia 21½:1—3 h.p.—1200 r.p.m.
1—Link Belt 25:1—r.p.m. input 1150—r.p.m. output 46, including 7½ h.p. G.E. totally enclosed motor.

V-BELT DRIVE
1—21¾" diameter x 7½" face, 5 groove.
1—16½" diameter x 7½" face, 5 groove. (With clutch).

DRYER SECTIONS
8—Dryers 36 x 64 with frames, bearings, gears, felt roll, base plates, etc.
5—Dryers 36 x 72, complete with frames.

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8—48" diameter x 118" face.
1—28" diameter x 76" face.
1—48" diameter x 94" face.
2—25" x 120" (Baby Dryers).
1—48" x 100".
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2—I. W. E. Erkensators—bronze construction—complete with motors, starters and distributing box.

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2—12 plate Flat Screens.
1—4 plate Flat Screen.
1—6 plate Flat Screen.

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1—Dilts Hydrafiner (1200 r.p.m.)

JORDANS
1—Noble & Wood, Pony Monarch, Belt Driven.
1—#2 Miami.
1—No. 9 Emerson Jordan—for direct connection to a motor.
1—Noble & Wood Monarch.

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1—96" Rogers Knife Grinder.

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1—50" Laminating Machine—with 3 dryers.

PULLEYS
Various cone and assorted pulleys.

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1—32" three pocket Glens Falls Grinder (for 27" wood).

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1—IMPCO centrifugal pulp screen design No. 3.

PULPER
1—Jones Pulper.

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1—Erie coal pulverizer.

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1—Buffalo Pump—5500 g.p.m. (50' head).
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1—Bell & Gossett—300 g.p.m.—120' head—including 15 h.p. motor.
1—Goulds Sump Pump—50 g.p.m.—20' head—including motor.

Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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1—72" Downingtown Expansion Reel.
1—2 Bowl Reel—110" face.

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500—Brass tube-steel tube—rubber covered iron rolls—various sizes

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20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock.

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1—50" Hamblet Sheeter.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

SHREDDERS
1—Gilman Shredder.
1—Waterville Shredder.

SLITTERS AND WINDERS
1—Cameron—Type 10—72" face.
1—Cameron—type 10-10—72" face. (Shear cut type.)
1—114" Kidder.
1—30" Langston.
1 36" Beck Razor Blade type Slitter & Winder.

STACKERS
1—Economy Engineering 2000# capacity—with motor.
1—Economy Engineering 1000# capacity—hand operated.

STOCK PUMPS
1—10 x 12 open impeller. (All lead).
1—8 x 10 Moore & White Triplex.
Numerous other Centrifugal Stock Pumps. Advise as to your requirements.

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1—18" diameter x 100" drilled face.

SUCTION FELT ROLL
1—Nash 110" Suction Felt Roll.

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1—84" Embossing Toilet Roll Winder.

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1—No. 1 Nash Hytor Vacuum Pump.
1—No. 7 Sturtevant Vacuum Pump.
1—14 x 20 Connersville.
1—18 x 28 Sandusky.
1—Sandusky 8 x 10.

WET MACHINES
1—74" Moore & White.

YANKEE DRYERS
1—8' diameter x 120" face.
1—8' x 175" face.

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1—New Beloit 22" diameter Suction Couch Roll for 119" wire width with 115" suction opening.

1—Beloit 22" diameter Suction Couch Roll for 111" wire width with 107" suction opening.

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1—Lodemann Brothers Model #5—MTX. Requires 3 h.p. motor.

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1—600#-Fell 36" face x 38" dia.
2—750 lb. Horne Iron Tub. Roll 60"x40"
4—1200 lb. E. D. Jones Beater—no tubs.
1—1200 lb. Noble and Wood—no tub. Spare new fillings for roll.
3—Valley Iron—Roll 67" diameter x 60" face —wood tub.
4—E. D. Jones 2000# iron tub—with Warren hydraulic lighter hoists. Roll 67" dia. x 60" face.
1—Breaker Beater—Iron Tub—35 ton capacity.

BEATER ROLLS
3—44" face x 32" diameter.
1—48" face x 48" diameter.

BIRD SCREEN PLATE
17 Plate—60 cut. New condition

BLEACHERS
3—Fletcher high density bleachers—used 8 months

BLOWERS
3—Wilbraham-Green Rotary Positive Blowers and Gas Exhauster.
1—Sturtevant #8.
1—American Sirocc Size 4.
2—American Blowers #300.
1—American Blower #700.
1—American Blower #750.
1—Buffalo Size 40.
4—Buffalo Forge Co. #24 Cast Iron Blowers.
2—Buffalo Size 4.

CALENDERS
1—38" Textile Machy. Co. 3 roll Finishing Calender.

CALENDER DOCTORS
1 set of 18 Warren Doctors 184" face with frames.
40 Warren Doctors—various sizes

CALENDER ROLLS
18 rolls various sizes

CALENDER STACKS
1—3 roll Holyoke 36" face.
1—Pusey & Jones 9 roll 64" face.
1—7 roll—72".

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1—Nash—Gas or Air Compressor—Type MD 671. Capacity 40 CFM at 10#. Direct connected to 5 h.p.—1750 r.p.m.—440 volt motor.

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1—Langston 74" r.h. Type S. Continuous Travel Cutoff, with change gear box.

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3—Sanitary Napkin Machines. With motors and starters.
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1—19½" diameter x 82" face—brass covered.
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1—110" face x 38" dia.
1—72" face x 30" diameter.
1—70" face x 30" diameter.
2—84" face x 36" diameter.

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1—122" face 16" dia.
1—138" face 17" dia.
1—120" face 9¼" dia

DRYER DOCTORS
40—Warren Doctors. Various sizes.

DRYERS
2—24" Dia. x 48" Face.
1—24" diameter x 72" face.
5—74" face x 28" diameter with gears and bearings.
5—74" face x 40" diameter—with gears and bearings.
10—New 120" face x 48" diameter dryers.

FLAT SCREENS
1—Harmon 16 plate.
1—Montague 6 plate. Ball bearing.
1—12 plate Bagley & Sewall Flat Screens with scrapers and spare set of plates.
6—6 plate Sandy Hill Flat Screens

FORK TRUCK
1—MobileLift—Gasoline—Lift 72".

FOURDRINIER SHAKES
1—Beloit Fourdrinier Shakes.

FOURDRINIER WET END
1—150" Pusey & Jones.

HAMMERMILLS
1—American Hammermill—57" anti friction bearing equipped.
1—Williams 18" Hammermill Ball Bearing

HOG
1—Mitts & Merrill Hog. 12" x 12".
1—Fitchburg 7 x 9. Ball bearing.
1—Mitts & Merrill.

JORDANS
2—#2 Black-Clawson. For motor drive.
1—E. D. Jones Imperial—direct connected to 550 volt motor—with starter.
1—Dillon—25 ton capacity.
1—Dillon #2—50 ton capacity.
2—E. D. Jones Standard Ball Bearing direct connected—75 H.P. 440/3/60 motor.

KNIFE GRINDER
1—84" Covitt & Hanchett with 7½ HP motor. Purchased new—1943.

KNOTTERS
1—Wells Knotter.
2—Trimbey Knotters.

MOTORS
1—G.E. 200 h.p.—550 volts—3 phase—60 cycle.
1—Westinghouse 40 h.p. 900 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—G.E. 5 h.p. 1800 r.p.m.—3 phase—60 cycle—220 volts—with starter.
1—G.E. 75 h.p. 575 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—G.E. 100 h.p. 575 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—G.E. 50 h.p. 400 r.p.m.—3 phase—60 cycle—440 volts—with starter.
1—200 h.p. 285 r.p.m.—440 volts—3 phase—60 cycle.
1—800 Ampere Westinghouse Generator. New.
2—G.E. Slip Ring—125 h.p.—880 r.p.m.—440 volts.

PLATER
1—Holyoke 2 Roll 18" dia. 38" face.

PULLEYS
60—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

PULP EQUIPMENT
1—120" face Kamyr Press.
1—72" Sumner Disc Barker with motor.
2—IMPCO Pulp Screens
2—Trimbey Knotters
2—Aqmow Pulp Screens
1—Jigger—1 deck—vibrating screen.
1—Zaremba Triple Effect Evaporator — 84" diameter.
1—Mitts & Merrill #17 Pulpwood Chipper.

PULPERS
1—Voith Pulper 20 tons cap.
1—Bird Pulper.

PUMPS
3—Worthington Pumps 10,000 g.p.m.—35' head. Requires 75 h.p. at 850 r.p.m.
6—Warren Vertical Pumps. 6" by 5". 135 g.p.m. 80' head. Direct Connected 6 h.p. motor 440 volts.
3—Worthington 3". 2 stage. 200 g.p.m. 234' head. Bronze Ball Bearings.
1—American Marsh 200 g.p.m.—80' head—3" suction 2½" discharge.
3—De Laval Verticals—540 g.p.m. 1740 r.p.m. —30' head 5" x 5". Direct connected to 7½ h.p. 440 volts.
1—6" Pusey & Jones Open Impeller Centrifugal Stock Pump—belt driven.
5—3" Lance Size Pumps—belt driven.
2—Worthington Monoblock—250 g.p.m.—130' head —direct connected to 15 h.p.—3500 r.p.m.—220/440 volts, totally enclosed, ball bearing motor.
1—Terry Marsh 750 g.p.m., 250' head. Requires 125 h.p. motor.
2—Ingersoll Rand all bronze 175 g.p.m.—40' head.
1—Worthington 3"—200 g.p.m.—3560 r.p.m.—400' head.

REDUCERS
1—Jones Worm MAAG Vertical Reducer. Ratio 248 to 1. Serial #205661.

REFINERS
1—Weiner Refiner 24" with extended base for direct connection to motor, and a large list of new spare parts.

ROLLS
15—Brass 240" face x 9¾" diameter. 12½" journals.
75—Steel—160" face x 7" diameter.
17—Brass—118" face x 5" diameter.
200 Assorted rolls.

ROTARY SCREENS
7—#1 Bird with steel vats and liner
3—Moore & White
5—Bird Rotary Screens. Cylinder 36" dia. x 90" face. Copper vats.

RUBBER PRESS ROLLS
1—120" Face—19" Diameter
1—119" face x 19½" diameter.
1—100" face x 18" diameter.

REELS
1—102"—4 bowl reel
1—192" Pusey & Jones Single Drum Reel.

SHEETERS
1—138" Hamblet Duplex
1—104" Hamblet
1—63" Hamblet Duplex Rotary Cutter—12 roll backstand with M & W layboy.
1—50" Hamblet with 6 roll back stand and motor.

SHREDDERS
2—24" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Taylor Stiles Portable Pulp Shredder—on wheels.
1—Rythor and Pringle Shredder.
3—36" Mitts & Merrill with 125 h.p. motors and starters.

SLICES
2—E. D. Jones Flexible Slices.

SLITTERS AND WINDERS
1—40" Waldron—2 drum.
1—42" Cameron Slitter with 30 knives and motor.
1—120" Moore & White 4 drum slitter and rewinder—rebuilt.
1—106" Pusey & Jones Slitter and Rewinder with Unwind Stand.

STONITE PRESS ROLL
1—Stowe Woodward 111" face x 22" diameter

STUFF PUMPS
1—Dillon 7½ x 12" duplex
1—Moore & White Duplex 8x12".
1—Sherrie 8" single plunger.
1—3/2" x 3" Worthington Triplex.
1—Beloit Duplex—8 x 18".
1—10 x 20 Triplex.

SUCTION FELT PIPE
1—Garbold Suction Felt Pipe.

SUPERCALENDER STACKS
1—7 roll Norwood—52" face. Complete with drive.
1—72" 9 roll Norwood—complete with drive.

TRIMMERS
1—32" Undercut Trimmer.
1—36" Undercut Trimmer.
1—40" Undercut Trimmer.
1—44" Saybold Holyoke Trimmer.

TURBINES
1—Westinghouse 125 h.p. 125 steam pressure—15 back pressure. Complete. Used 1 year.

VACUUM PUMPS
2—14" x 20" Connersville
1—Nash Hytor Size MD 671. Direct connected to 1½ h.p. 220/440 motor.

VOITH INLET
1—112" Voith High pressure stock inlet, equipped with distributor breaker roll.
1—141" Voith Inlet with distributor roll.

SITUATIONS WANTED

MR. PAPER BAG MANUFACTURER—Can you use a man who desires management for a career? ASSETS:—Loyal, honest, judicious, 20 years experience as a top notch adjuster. Address Box 47-397 care Paper Trade Journal. J-26

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FOR SALE

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118" Hamblet heavy duty Mill Type Sheeter
94" Inman shear cut Slitter.
84" Brown & Carver hand clamp Power Cutter
44" National Automatic Power Cutter, rebuilt
70" Meisel two color rotary.
25 x 36 Babcock Cylinder Press, 3-roller.
20 x 28 six-rod Standing Press.
14 x 22 John Thomsen.
American heavy duty Cross Cut Saw
Bunn Tying Machine.
Baling Presses—NEW—both hand and power

THOMAS W. HALL COMPANY, Inc
120 West 42nd St., New York 18, N. Y.
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FOR SALE

1—Chandler Taylor 2 cylinder engine 11" x 11" steam 150 lb. r.p.m. 250.
1—Chandler Taylor 2 cylinder engine 12" x 12" steam 250 lb. r.p.m. 230.
1—Harrisburg Uniflow Engine, cylinder 20" dia. 20" stroke 120 lb. steam 240 h.p.
Address Box 47-313 care Paper Trade Journal. TF

FOR SALE
CONTINUOUS FACIAL TISSUE FOLDER AND CUTTER

Capacity a car eight hours. Delivery June 1947. Address Box 47-432 care Paper Trade Journal. J-12

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2 COLOR ROTO

38" wide by 25" circumference. Sheet Fed Rotogravure Press. Two separate colors but not surprinted. Press run very little. Without automatic feeder or electrical equipment. Will convert into roll feed if desired.

PRECISE ENGINEERING COMPANY
400 W. Madison Chicago
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FOR SALE

1—30" Kidder Model SL Shear Cut Slitter and Rewinder.
SOS Bag Machines making 1, 2, 3, 7, 8 & 10 lb. bags.
1—52"; 1—60"; 1—64" Waldron Brush Coaters. Festoon equipment. New J. O Ross Drying Oven. 5 Buffalo Blowers New winding reel. Motor equipments.
1—Sheridan Die Press 27x44"—rebuilt.
1—14 x 16" Horizontal Twin Variable Speed Engine.
Power Paper Cutter: 1—44" 20th Century Seybold; 1—34" late Oswego. 1—54" Seybold Holyoke Mill Type.
1—Potdevin and 1 Lockport flat and square bag machines, complete with motor equipments, making bags from ¼ to 35 lbs.
1—64" complete creping machine.
2—#2 Lanoye Pulpers.
1—55" wide Hamblet Vickery Layboy.
1—36" Beck Shear Cut Slitter and Rewinder.
1—48" Inman board slitter, complete with motor.
1—60" and 1—50" seven roll Holyoke Calender Stacks.
1—60" Hammersley Score Cut Slitter & Rewinder.
1—51" Hamblet Rotary Sheeter with slitting attachment, Moore & White layboy and 8 roll backstand.
4—Rotary Embossing Machines, 33" wide.
1—Laminating machine 96" wide. Will laminate sheets any length up to 150" by 1" variations. Suitable for laminating paper or board.
1—7"x8" Gould three plunger stock pump, with bronze fittings.
1—26" Waldron 8 Color Wall Paper Printing Press, with Jolly static eliminator, 50 ft. turn around dryer, blower and AC motor equipment.
1—74" Black-Clawson Single Rotary Sheet Cutter.
1—Morrow Wrapping and Sealing Machine. Complete with motor and controls. Capacity 450 packages per hour.
1—40" Jacques Shear.
1—52" Cameron, type 40-1AF. Slitter and Rewinder.
1—Bagley & Sewall 30 x 72" Wet Machine.
1—24" Model B Fales Slitter & Rewinder. Two sets of 3/8" Knives. 5 HP. AC Motor & Reliance Drive.

GIBBS-BROWER COMPANY, INC.
21 East 40th St., New York 16, N. Y.
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PAPER TUBE AND CORE MACHINERY
For Sale

2—Langston or Knowlton Spiral Winders, Cut-off Saws
4—Knowtlon Tube Recutters with Knives
1—Roll Slitter and Rewinder 69" Wide, Shear Cut
2—Punch Presses for Paper Caps
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1—Multi-Ply Glue Pot seven plies for paper cores

We Purchase All Kinds Paper Tube Machinery.

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CHICAGO 2, ILLINOIS J-12

FOR SALE—One 50" Hamblet Cutter with 10 roll back stand. Waste Products Company, P. O. Box 675, Niagara Falls, N. Y. J-12

DOCTOR RODS—for Carbon and Wax Paper Machines. Precision wound and uncoilable. Blue print and price list on request. Address Box 47-223 care Paper Trade Journal. J-19

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KRAFT PAPER

16"-18"-20"-21"-22" Jumbo Rolls 50 Lb. Basis @ .13c per Lb. IMMEDIATE DELIVERY. Box 47-430 care Paper Trade Journal. J-12

FOR SALE

1 Noble and Wood Mammoth Jr. Jordan, arranged for belt drive, capacity 1 ton per hr.
1 Noble and Wood Mammoth Jr. Jordan, arranged for direct connection to meter, less motor, capacity 1 ton per hr.
1 Westinghouse geared speed changer, ratio 3 to 1, 175 H.P. Type SVR-13
1 Westinghouse geared speed changer, ratio 1 to 1, 175 H.P. Type SVR-13
2 Riley 5 retort stokers with steam engine drive
1 4000# capacity motor driven freight elevator with automatic stop control—can be inspected in operation at our plant.
1 120 inch slitter & scorer (fully equipped) Knowlton 60 x 120
1 Hamlet sheet cutter 82 inch knife
1 Oswego Paper Cutter 63 inch knife (A-1 condition)
1 Hobbs double scoring machine
1 Hobbs Fly machine
1 Hobbs Ender
1 Hobbs double corner cutter
1 Hobbs hand topping machine
1 Potdevin hand label glueing machine
1 Knowlton #7 single corner stayer
1 Model F-23-T Elwell Parker Lift Truck, fork type complete. Extra battery charger, and extra battery 15 cell 21 plate, type TLM Exide (New) 4000# capacity
1 6 plate packer Screen (Sandy Hill)
1 Camachine #6 model 1A
1 Carrick combustion controls for two boilers to be sold as unit.
1 82" Moore & White Rotary Cutter Duplex
1 #4 Reeves Drive open
1 #5 Reeves Drive open
1 Shepard Elevator, motor driven 1 H.P. 1 ton capacity
1 Shepard Elevator, hand operated 1800 lbs. capacity
1 Ton Elevator motor driven ½ H.P.
1 Deming 3½x4 triplex plunger pump
1 Lawrence 6 inch double suction water pump
2 8x12 inch Moore & White Duplex pumps
3 Downingtown Fan Pumps 6"
1 Ingersoll Rand Stock Pump (New) 10x8
1 Ingersoll Rand Stock Pump New) 12x8
1 Brass covered finishing press roll 17¾ inch dia. x 89½" face complete with bearings and Noble and Wood friction drive
10 100" phosphor bronze No. 2-A Bird Screens .022" slots never used after being reset once
12 6½ dia. x 92" face steel dryer felt rolls, 1 7/16" journals
1 750 GPM underwriter's fire pump, steam driven (complete)
1 Wagner Motor, 1 phase, type 14TBA, 5 H.P., 60 cycle, 1750 R.P.M. Numerous large dia. steel and cast iron pulleys
Numerous elbows and tees for 5, 6, 8, 10, 12" spiral rivetted pipe

A visit to the mill would prove profitable as we have many items for sale too numerous to mention. See J. R. Stephenson, Plant Engineer at our plant in Walloomsac, New York.

WALLOOMSAC PAPER MILLS, INC.
Mills: Walloomsac, New York
Main Office: 25 Vanderbilt Avenue
New York 17, N. Y.

FOR SALE

Complete paper mill 40" machine 9 ton capacity for coarse paper or paper board available August 1st. Address Box Number 47-442 care Paper Trade Journal. J-12

EQUIPMENT FOR SALE—One (1) Kerr Steam Turbine No. 246 complete—Serial No. 772—400 B.H.P.—3600 RPM Directly connected to an Allis Chalmers Generator — Serial No. 102437—220 volt, 3 phase, 60 cycle, 3600 RPM and an Allis Chalmers Exciter direct connected, Serial No. 92347. Write Sangamon Paper Mills Inc., 137 W. Pershing Rd., Chicago, 9, Illinois. J1-3

FOR SALE | FOR SALE | FOR SALE

FOR SALE

BEATERS
4—68 x 60 Holyoke iron tub
3—72 x 44 Noble & Wood, no tub
2—82 x 42 Downingtown, iron tub

CALENDERS (SUPER)
1—66" nine roll Holyoke, anti friction
1—55" nine roll Holyoke anti friction
1—56" nine roll Holyoke
1—52" seven roll Textile

CREPER
1—72" creping machine, five 42 x 73 dryers

CUTTERS
1—84" Clark with layboy
1—100" Dillon with layboy
1—72" Finlay with layboy
1—50" Finlay
1—50" Clark

DRIVES
1—Waterbury, size 10, type C
1—Waterbury, size 20, type C, rebuilt

DRYERS
1—36 x 154"
3—28 x 114"
4—36 x 108"
1—48 x 98"

ENGINES
2—Sturtevant V 57—10" x 9", 50 HP.

FOURDRINIER PARTS
1—110" Fourdrinier with three sets presses 109 x 20

GRINDER KNIFE
1—62" Seybold
1—45" Springfield

JORDAN
2—Union
2—Horne
1—Claflin No. 2
3—Brushes

HOT MELT SYSTEM
1—Wolverine

KETTLES & TANKS
2—300 gal. jacketed, 100 lb. pressure
1—75 gal. copper jacketed
3—
1—16 ft. dia. conical settling tank

PRESS PARTS
3—Sets 108" x 20" dia.
2—Sets 120" x 18"
2—Sets 150"

PULPER
1—No. 3 Lamneye
1—No. 1 Lamneye

PUMPS
1—10 x 12 Deane triplex rebuilt
1—5½ x 6 Gould triplex, hydraulic No. 41944
1—7½ x 6 Deane triplex hydraulic

PUMPS (VACUUM)
1—Chicago pneumatic

RIFFLER
1—13, 14 and 15 ft. new system

SCREENS
2—No. 3A Bird
1—No. 2 Bird
2—Moore & White No. 2
1—Jones Leithwaik
4—12 plate Packer flat
2—12 plate
1—6 plate Packer
1—3 plate Valley

MOTORS
1—two cylinder Lancaster
1—three cylinder APMEW, moiud 50 x 100

SLITTERS AND WINDERS
1—150" Moore & White four drum
1—114" Kidder two drum

FRANK H. DAVIS CO., 175 Richdale Ave., Cambridge, Massachusetts TF

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Tarentum, Pennsylvania

FOR SALE—Wonderful buy of following equipment and materials to highest bidder. We reserve the right to accept or reject any bids that are made.

Item No.	Qty.		Price
1	1	104" Sheet cutter complete with stands for 10 rolls, and layboy. This is a Moore & White simplex cutter. Also has complete set of joggers for layboy. Have DC electrical equipment for above.	$4000.00
3	1	Daniel Rag Cutter #2—Complete with five cylinder Holyoke Duster.	$ 700.00
5	1	R40 Reducer, 12 to 1 ratio	$ 127.00
6	1	Slat Conveyor steel construction 4' wide, 3' high, 42' long, driven by one Jones Spur Gear Reducer, ratio 27 to 1, serial 10135. Driven by one Sprang Electric DC Motor type LC 10 HP 37.2 amp. 230 V. 100 RPM Ser. DL 2005213, complete with sheaves and V Belt drive, one Westinghouse Automatic Starter.	$ 425.00
8	1	John Waldron Corrugated & Embosser #711, 52"	$2000.00
9	1	Thorpe Hydraulic Press complete with 4 steam platen plates 40" x 40"	$2100.00
7	1	Viscolizer Pump for above press.	$1200.00

MISCELLANEOUS

8	2	Platform Scales.	$ 50.00
9		Paper Testing Equipment.	$ 250.00
10		Two-wheeled hand trucks.	$ 60.00
11	1	set—Black and Clawson Calender Stands complete with bearings and 8 rolls, 80" face.	$3150.00
12	1	set—Black and Clawson Calender Stands complete with 9 rolls, 108" face.	$3850.00
13	1	set—2 spool reels, vertical extension 9' 2" face.	$ 800.00
14	1	set—Vertical reels, 2 spool, 7' 2" face.	$ 600.00
15	1	Whiton Steam Turbine used for driving induced pressure fan for boiler. Whiton Turbine type BC, 2985 steam pressure 140 to 250 lbs., speed 1480, back pressure 7 lbs., HP 23 GOOD CONDITION.	$ 450.00

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CORES:
250 pcs.—6" I.D. 21½" long ½" wall—NEW
35 pcs.—6" I.D. 19" long ½" wall
160 pcs.—6" I.D. 24½" long 7/16" wall
110 pcs.—6" I.D. 30" long ½" wall
170 pcs.—6" I.D. core 35½" long ½" wall
250 pcs.—Wooden cores 30" long 10" dia. 3¼" sq. hole.

CORES WITH STEEL ENDS 3" I.D. Hole
29 pcs.—21½"
17 pcs.—21"
19 pcs.—22½"
5 pcs.—28"
2 pcs.—24½"
3 pcs.—31½"
3 pcs.—28½"

CORES WITH STEEL ENDS 6" I.D. Hole
28 pcs.—40"
3 pcs.—63"

CORES:

3880 pcs.	—1½" x 4	$24.00
2980 pcs.	—1¼" x 5	18.00
2550 pcs.	—1¼" x 6	15.00
976 pcs.	—1¼" x 14	18.00
560 pcs.	—1¼" x 10	6.50
773 pcs.	—1¼" x 13	12.00
415 pcs.	—1¼" x 25	18.00
2106 pcs.	—1¼" x 9	24.00
218 pcs.	—1¼" x 20	6.00
1730 pcs.	—1¼" x 3	.00
2200 pcs.	—1¼" x 1½	8.00
664 pcs.	—1¼" x 18	14.00
300 pcs.	—1¼" x 15	6.00
2275 pcs.	—1¼" x 2	6.50
1125 pcs.	—1¼" x 3½	5.33
650 pcs.	—1¼" x 3½"	4.00
2700 pcs.	—1¼" x 2½"	10.00
6300 pcs.	—1¼" x 1"	14.00
550 pcs.	—1¼" x 8"	5.00
750 pcs.	—1¼" x 5½"	4.20
475 pcs.	—1¼" x 12	8.00
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25 bags—2 5/16" long 1⅛ O.D.—7/16" hole (950 per bag)
2 bags—standard size

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2 bags—1½" hole 2½ plug $5.00

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FOR SALE

45 DRYERS 36x72 FRAMES
4 Sets—Primary Presses
2 Sets—Main Presses
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1—2" Drum Winder Drives and other parts.

Can be had at once.

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15 Dryers, 48" dia. x 86" face, complete with gears, bearings, steam joints and double deck frames.

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FOR SALE—1 Hamilton-Corliss Variable Speed-Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore 30, Md. TF

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WANTED

2 Asphalt Laminators
(one 36" to 60")
(one 60" or over)

Also rewinders and slitters for asphalt duplex material.

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BIRD CENTRIFINERS

Write giving price, motor specs. and condition.

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SLITTER WANTED—48" to 60" wide Cameron Slitter #2A or comparable machine. Give all details concerning cutting equipment and price. Address Box 47-421 care Paper Trade Journal. J-12

WANTED — W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 47-70 care Paper Trade Journal. TF

WANTED—Brightwood Box Machine. Address Box 47-71 care Paper Trade Journal. TF

WANTED

WANTED TO BUY

118" to 124" cyl. or Fourdrinier machine. Desire delivery in last quarter of 1947. Address Box 47-288 Paper Trade Journal. J-12

PAPER MANUFACTURER desires to purchase or invest in converting business of standard paper products. Address Box 46-708 care Paper Trade Journal. TF

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED AT ONCE—1—Synchronous Motor 350-375 or 400 H.P., 360 R.P.M., 440 volt, 3 phase, 60 cycle with starting equipment. Address Box 47-451 care Paper Trade Journal. J-12

WANTED—For immediate delivery, one Beck Cutter 40" or larger. Electric eye cutoff if possible. Address Newark Paraffine and Parchment Paper Co., 50 Jelliff Ave., Newark, N. J. J-19

MACHINERY WANTED—1—Induction Motor, 150 HP, 450 RPM, 440 volt, 3 phase, 60 cycle. 1—Synchronous Motor, 80% power factor, 200 HP, 450 RPM, 440 volt, 3 phase, 60 cycle. Also starting equipment for the above motors. Write Sangamon Paper Mills Inc., 137 W. Pershing Rd., Chicago, 9, Illinois. Jl-3

MISCELLANEOUS

WILL EXCHANGE board for laminating, mounting, lining and die-cutting machinery. Address Box 46-707 care Paper Trade Journal. TF

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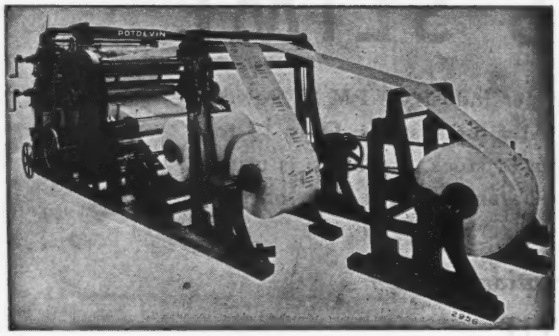

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Valley Iron Works Co.

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Noble & Wood Machine Co.
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J. E. Rhoads & Sons
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Walworth Company

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Foster Wheeler Corp.

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Valley Iron Works Co.

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J. J. Ross Company
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Shartle Brothers Machine Co.
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Waldron Corp., John

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Dilts Machine Works
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Grinnell Company
Hamblet Machine Co.
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Link Belt Company
Lobdell Co.
Magnus Metal Corp.
Noble & Wood Machine Co.
Ryther & Pringle Co., Inc.
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Union Machine Company
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Nichols Engrg. & Research Corp
Ross, J. O., Eng. Co.
Shartle Brothers Machine Co.
Williams Apparatus Co.

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Link Belt Company

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Amer. Resinous Chemicals Corp
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Geigy Co., Inc.
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The Kinsley Chemical Company
Mallinckrodt Chemical Works
The Mathieson Alkali Works, Inc
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Nopco Chemical Co.

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United States Rubber Co.
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Wyandotte Chemicals Corp.

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Monsanto Chemical Co.
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Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

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Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
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Waldron Corporation, John
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Dennis Chemical Company

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C. K. Williams & Co.

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Cochrane Corp.

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Ross Engineering Corp., J. O.

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Taylor Stiles & Co.

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DECKLE STRAPS
Stowe Woodward, Inc.

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General American Transportation Corp.
Pusey & Jones Corp.

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Lobdell Co.
Lodding Engineering Corp.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

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Lodding Engrg. Corp.
Raybestos-Manhattan Inc. Manhattan Rubber Division
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Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
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Bloomfield Woolen Co.
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Shuler & Benninghofen
Waterbury Felt Co.
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The Cowles Detergent Company

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The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Waldron Corp., John

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Amer. Resinous Chemicals Corp.
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W. H. Loomis Talc Corp.
Vanderbilt Co., R. T.
Witco Chemical Co.

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Improved Paper Machy. Corp.
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Oliver United Filters, Inc.
J. O. Ross Engrg. Corp.
Witco Chemical Co.

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Walworth Company

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United States Rubber Co.

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South Wabash Engrg. Co.

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Williams Apparatus Co.

GASKETS
Raybestos-Manhattan Inc., Manhattan Rubber Division

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Link Belt Company
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D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John
Westinghouse Electric Corporation

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Norton Company
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Norton Company
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Lukens Steel Company

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Stickle Steam Specialties Co.

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General Electric Co.
Grinnell Company
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Rodney Hunt Machine Co.
Ingersoll-Rand Co.
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Manhattan Rubber Division
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

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Heppenstall Company
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Valley Iron Works Co.

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Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies
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Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

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PEREOMETER
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pH METER
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Crane Company
Grinnell Company
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Stowe-Woodward, Inc.
Walworth Company

PIPE FITTINGS
Crane Company

PIPING, FABRICATED
Crane Company

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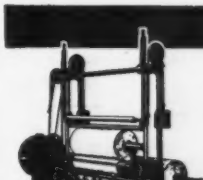

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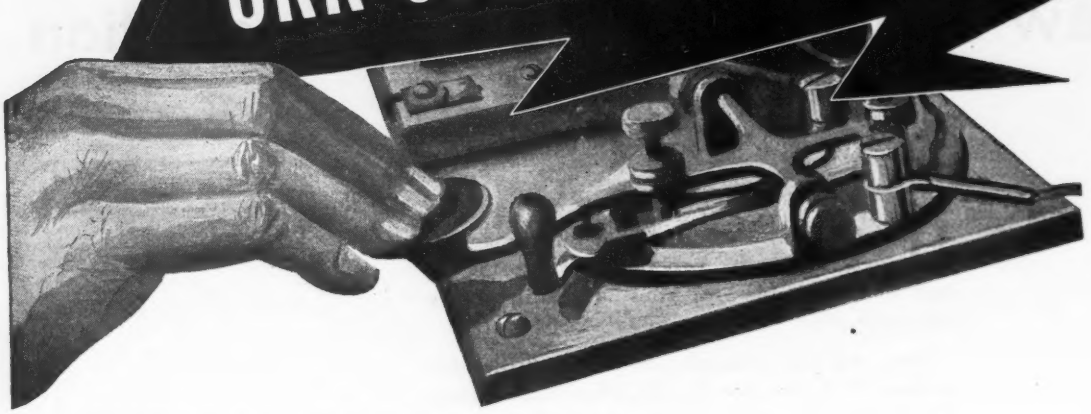

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CALENDAR OF COMING EVENTS

June 20-21, 1947—Paper and Twine Association, Annual Meeting, French Lick Springs Hotel, French Lick Springs, Ind.

September 3-6, 1947—TAPPI Fundamental Research Meeting, Appleton, Wis.

September 24-27, 1947—TAPPI Acid Pulping Meeting, Minneapolis, Minn.

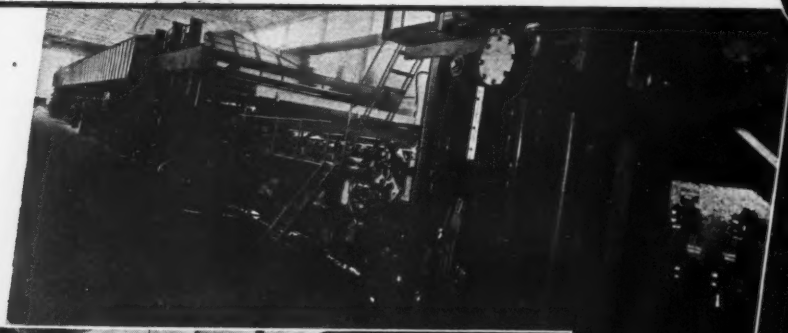
October 9-11, 1947—TAPPI Alkaline Pulping and Chemical Products Meeting, Asheville, N. C.

October 27-29, 1947—The National Paper Trade Association of the U. S., Inc., Semi-annual Convention, Hotel Sherman, Chicago.

November 3-5, 1947—TAPPI Second Engineering Conference, Philadelphia, Pa.

May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

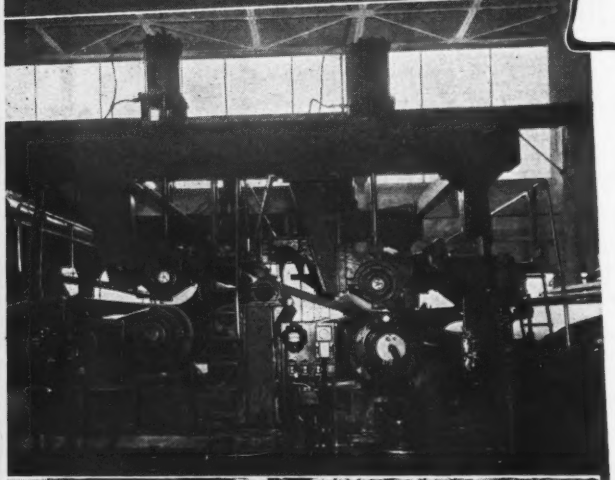
PAPER • • • America's 6th Industry

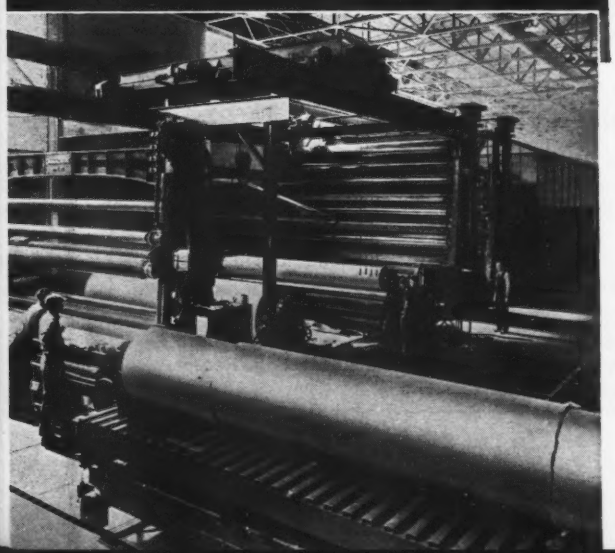


With a start-up which excelled anything in Champion's history from a standpoint of smoothness and efficiency, the world's largest white papermaking machine rolled into solid production in the Canton plant January 31, at 10:45 P. M.

Even Division Manager H. A. Helder was startled by the smoothness with which the new No. 11 machine swung into action. Not only was Mr. Helder surprised with the original operations, but plant superintendents, foremen, machine men and contractors, alike, were virtually overwhelmed with the success of the "first start-up".

Excerpt from "The Log", published by Champion Paper & Fibre Company, March 1947.





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